FEBRUARY 2026

CLIMATE ACTION FRAMEWORK 2026

MINNESOTA

Climate Action Framework 2026

Contents

Letter from the governor

The natural beauty and vibrancy of our state support a special way of life in Minnesota. Climate change threatens that existence. Extreme storms pose massive safety risks to people and property, and recovery costs Minnesotans money. Warmer winters means less fun on the snow and ice, taking away our state's most iconic and cherished traditions. Summers bring more wildfire smoke, and poor air quality forces us indoors.

These changes show why it's essential to address climate change head-on, together. By acting now, we can have cleaner air, safer communities, and a strong, forward-looking economy powered by good-paying jobs.

Building on decades of climate leadership, Minnesota launched the Climate Action Framework in 2022, our game plan for tackling this challenge. The framework has successfully guided our state's climate actions for the last three years. This updated framework brings a stronger focus on economic and health benefits and local collaboration.

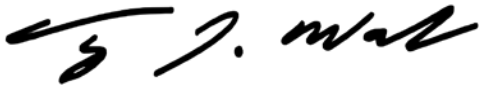
In 2023, Minnesota made major progress on climate action, reaffirming our place as a national climate leader. We passed more than 40 laws and programs to reduce pollution, grow our economy, and prepare our communities for a changing climate. We committed to 100% carbon-free electricity by 2040 and invested millions to help communities reduce pollution and prepare for stronger storms, more flooding, and extreme heat.

Our climate leadership has never been more important. Rollbacks in federal climate commitments threaten the future we want for our kids and are expected to drive up energy costs. Minnesota has never shied away from leading, and we must lead now more than ever.

We've updated Minnesota's Climate Action Framework to meet this moment, and I am grateful to the many Minnesotans who participated in the process. The updated framework focuses on actions that create jobs, lower costs, reduce pollution, and make us safer. It also brings a stronger focus on economic benefits and local collaboration. By working together, we can protect what we love most about Minnesota — our clean air and water, our seasonal traditions, and our safe, resilient communities.

I also want to recognize Minnesota's climate leadership was made possible in part by the unwavering leadership of my friend Melissa Hortman. Melissa championed clean energy and nation-leading climate policy for decades. Under her Minnesota House speakership in 2023, Minnesota took a giant leap forward on climate, making the progress I mentioned above. Minnesota tragically lost Speaker Hortman last year, but her impact will continue for generations to come.

I hope every Minnesotan can see themselves in this framework, and I invite you to join me in taking action to build the future we want for our state — a future that is carbon neutral, equitable, and resilient.

Governor Tim Walz 

MINNESOTA

Executive summary

Minnesota's Climate Action Framework is the state's plan to reduce climate pollution, also known as greenhouse gas (GHG) emissions, and prepare communities for climate change in ways that benefit all Minnesotans. The framework builds on Minnesota's longstanding leadership in addressing climate change and aligns the state around the path forward. This framework comes out of the contributions of hundreds of Minnesotans. It invites all of us to contribute to creating the climate future in which everyone is healthy and safe in the face of climate change.

The urgency of climate action is underscored by Minnesota's 2025 GHG inventory. Minnesota's emissions have decreased 18% from 2005 to 2022, but emissions increased 5.1% between 2020 and 2022, as activity rebounded following the COVID-19 pandemic. While the overall emissions trend is downward, Minnesotans are also feeling the impacts of climate change more acutely, with more unhealthy air quality, more extreme rains, and more costs associated with these events.

The Climate Change Subcabinet has released the 2026 Climate Action Framework to reflect new opportunities, the progress Minnesota has made, and the need for accelerated action. The updated framework includes new GHG forecasting, a stronger focus on collaboration with local governments, and health and economic benefits for our communities.

Progress since the last framework

In September 2022, Minnesota launched the first Climate Action Framework. The 2022 framework laid the foundation for transformative local action on climate change. Thanks to a successful legislative session in 2023, the state strengthened its GHG emissions reduction targets to align with the framework's vision of achieving carbon neutrality by 2050.

Many recommended actions included in the first framework have already been implemented or are underway, including:

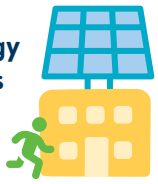
100% carbon-free electricity for Minnesota by 2040

A $100 million investment in climate-resilient community infrastructure

Incentives for electric vehicle buyers

Support for farmers to adopt climate-smart agricultural practices

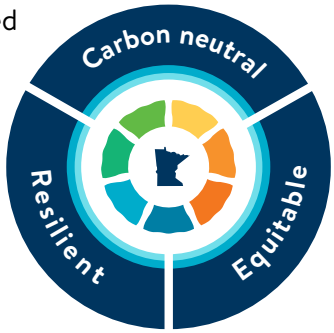
Expanding solar energy for schools



Conserving and managing our forests, grasslands, and wetlands

Our vision stands

Minnesota's vision for climate action remains unchanged. The actions included in the 2026 framework guide us toward a carbon-neutral, resilient, and equitable future for our state.



- **Carbon neutral:** By reducing climate pollution and balancing GHG emissions with carbon sequestration and storage, Minnesota will be carbon neutral by 2050.
- **Resilient:** Minnesota communities must plan for climate change and take action to prepare. Our communities, businesses, and natural environments will be resilient and ready to flourish in the face of climate-related challenges.
- **Equitable:** We must address the systems and barriers that lead to the inequitable impacts of climate change. All communities will thrive through the fair distribution of the benefits of climate action, and no community will bear disproportionate harm.

Seven goals

The 2026 Climate Action Framework maintains the original goals but divides clean energy and efficient buildings goal into two separate goals. The updated framework builds on this structure, with expanded actions under each goal.

Goal 1: Clean transportation

Connect and serve all people through a safe, equitable, and sustainable transportation system.

Goal 2: Climate-smart natural and working lands

Manage landscapes to absorb and store more carbon, reduce emissions, and sustain healthy and resilient lands and waters.

Goal 3: Resilient communities

Ensure all communities are prepared for, can respond to, and can recover from present and future climate impacts, including extreme weather.

Goal 4: Clean energy

Implement Minnesota's 100% carbon-free electricity by 2040 law and set a course for long-term, sustainable use of clean energy in the state.

Goal 5: Healthy lives and communities

Protect health and advance equity in a changing climate.

Goal 6: Clean economy

Build a thriving carbon-neutral economy that produces goods and services with environmental benefits and equitably provides family-sustaining job opportunities.

Goal 7: Efficient and resilient buildings

Build and maintain healthy, comfortable, safe, efficient, and resilient buildings and homes that cost less to operate, pollute very little, and support grid stability.

Accelerating action and reporting on our progress

To achieve our climate goals, we must track and report on how our collective actions are leading to overall progress. Each of the seven goal chapters identifies key desired results and targets to help define and measure progress. Minnesota will track state efforts and the ultimate effects of climate actions throughout the state.

Learn more Read the full 2026 Climate Action Framework by visiting **mn.gov/framework**.

Introduction

Introduction

In September 2022, Minnesota's Climate Change Subcabinet launched the Climate Action Framework, our state's plan to reduce climate pollution, also known as greenhouse gas (GHG) emissions, and prepare our communities for the impacts of climate change. While we have made progress since the framework was first published, we must continue to increase the pace and scale of our actions to achieve our vision of a carbon-neutral, resilient, and equitable Minnesota.

The 2026 Climate Action Framework includes GHG forecasting, a refined and expanded set of actions, and a stronger focus on collaboration with local and Tribal governments, community benefits, and workforce needs. It is designed to broadly guide climate action in Minnesota, with seven climate goals to help us achieve our long-term vision of carbon neutrality, resilience, and equity.

Meeting our climate goals and achieving our vision will require a team effort — all levels of government, along with businesses, nonprofits, and individuals working together.

Recognizing Indigenous presence and leadership

The State of Minnesota affirms its responsibility to learn from and cultivate respectful relationships with the Tribal Nations whose homelands we share. We recognize and honor the enduring presence, leadership, and knowledge of the Dakota, Ojibwe, Ho-Chunk, and the many other Indigenous peoples and Tribal Nations with ancestral and contemporary relationships to this region now called Minnesota — adapted from the Dakota phrase Mni Sota Makoce, "the land where the waters reflect the clouds."

We honor Tribal Nations' care for *Unci Maka/Nimaamaa-aki* and her waters since time immemorial, and their resilience in the face of displacement, broken treaties, forced assimilation, and other colonial injustices. This recognition carries an obligation to act. The State has a continuing responsibility to uphold inherent Tribal sovereignty and to engage in meaningful consultation and collaboration with Tribal Nations in caring for the lands and waters we all depend upon.

We remain committed to strengthening these relationships in ways that respect Tribal leadership, advance shared priorities, and support a healthy environment for generations to come.

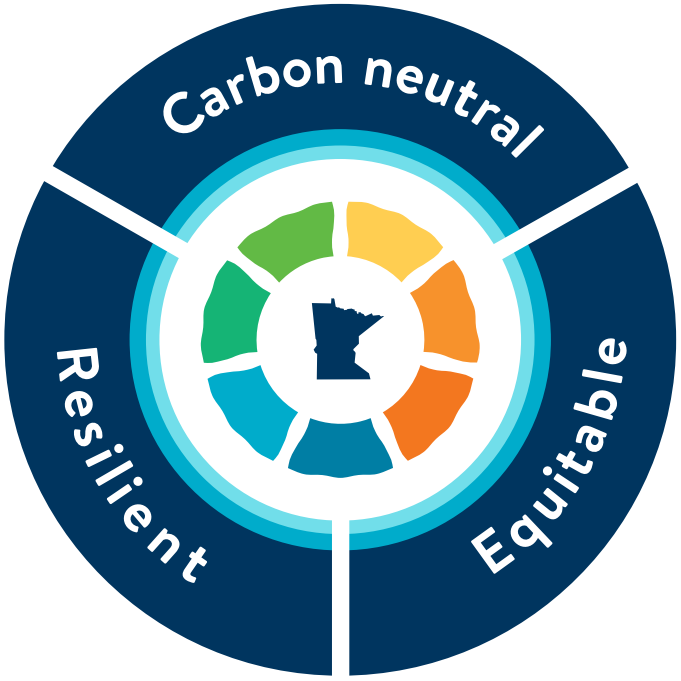
The eleven Tribal Nations of Minnesota

Minnesota's climate vision — carbon neutral, resilient, and equitable

We envision a climate future for Minnesotans that is carbon neutral, resilient, and equitable. Each of these pillars is essential.

Carbon neutral

By 2050, Minnesota achieves carbon neutrality. We will do so by substantially reducing climate pollution and balancing GHG emissions with carbon sequestration and storage, mostly in lands.



Resilient

Minnesota communities, businesses, and natural environments are resilient and prepared for climate change impacts. To achieve this future, the state and communities must plan for climate impacts, take action to prepare, and set up the systems needed to respond and recover when climate disaster hits.

Equitable

All communities thrive through the fair distribution of the benefits of climate action, and no community bears disproportionate harm from climate change impacts. We will achieve this future by acknowledging and addressing the systems and barriers that lead to some experiencing greater vulnerability to climate change. We will also ensure that all communities feel the benefits of climate action. We will do so while ensuring meaningful participation by community members in achieving our desired climate future.

Our climate vision forms the foundation of the 2026 Climate Action Framework, and the three pillars are interwoven throughout.

Progress since the last framework

The 2022 framework introduced climate action targets for Minnesota that were subsequently adopted into state law in 2023 — reduce GHG emissions 50% by 2030, achieve carbon neutrality by 2050, and prioritize investment in climate resilience over the next 10 years.

In 2023, Minnesota had a historic legislative session for climate action. The Legislature passed more than 40 initiatives to reduce climate pollution and prepare our communities for climate change.

Many of these initiatives were proposed in the 2022 Climate Action Framework, including:

- **100% carbon-free electricity for Minnesota by 2040**
- **A $100 million investment in climate-resilient community infrastructure**
- **Incentives for electric vehicle buyers**
- **Support for farmers to adopt climate-smart agricultural practices**
- **Expanding solar energy for schools**
- **Conserving and managing our forests, grasslands, and wetlands**

Together, these laws represent the most significant investment in climate action Minnesota has ever made and again mark our state as a national leader on climate solutions. Minnesotans are already seeing the benefits of this work. Dozens of new infrastructure projects across the state are preventing streets from flooding and protecting Minnesotans from extreme heat, severe storms, and other climate impacts. An additional $25 million investment in urban and community forest grants is improving urban green spaces and forest health. The popularity of programs like the electric vehicle (EV) rebate, the community resilience grants, and the solar on public buildings grants demonstrate the Minnesotans' demand for climate solutions.

Connecting our long-term vision to our near-term action

Throughout the framework engagement process, Minnesotans have said repeatedly that they want to see state leadership on climate action. Participants reported having personally experienced the effects of climate change and highlighted the desire for collective action, with a range of solutions.

The technologies and solutions needed to address climate change are well developed and, in many cases, either in progress or ready to be deployed at scale. But the landscape of climate action is dynamic and shifting in the short term. The current moment is particularly unsettling for climate action, as the impacts of climate change accelerate and federal policy and funding priorities on climate change are shifting in ways that slow action.

For a more detailed look at our engagement process, see the ***engagement supplementary document.***

In this moment, we've asked the questions — What is it time for now? What do we need to focus on in the near term to increase progress toward Minnesota's long-term climate vision of a carbon-neutral, resilient, and equitable state for every Minnesotan?

To answer these questions, we did the following:

Modeled ambitious greenhouse gas emissions reduction policies and actions. We studied which sectors need more focused attention and what actions could significantly impact progress toward carbon neutrality.

Focused on affordability as a broad value. Climate disasters are contributing to increasing financial burdens. Sustained action is needed to reduce the costs of disasters, so they don't undermine financial stability of families, communities, and governments. Minnesotans want to be able to afford the energy that powers their lives and afford being part of climate solutions. Clean electricity is usually the cheapest way to add new sources of power to our grid.

Continued to lead while staying abreast of the shifting federal landscape. The pullback of federal funding for clean energy investment, a push to undo climate pollution regulation, threats to federal partnership on disaster response and recovery, and attacks on climate science make progress on climate action harder to achieve. These factors also make Minnesota's climate leadership even more important.

The Climate Change Subcabinet subsequently identified six 'Big Things Now' that are crucial to accelerating Minnesota's path toward carbon neutrality, resilience, and equity so that all Minnesotans benefit from a cleaner energy economy and are protected in their homes, communities, and workplaces.

These Big Things Now should be seen as a complement to the wide range of initiatives, subinitiatives, and action steps in the seven goal chapters of the framework. The goal chapters go deeper on the wide range of actions needed, while these Big Things Now highlight major areas of focus over the next few years to help ensure the long-term progress toward Minnesota's climate vision.

Big Things Now

Six immediate actions Minnesota must take to address climate change

1. Keep pushing on 100% carbon-free electricity by 2040

Getting to 100% carbon-free electricity by 2040 is state law in Minnesota. A clean electricity grid is the backbone of reducing climate pollution. That means effectively implementing Minnesota's 100% carbon-free electricity law is foundational to achieving Minnesota's carbon-neutrality goal.

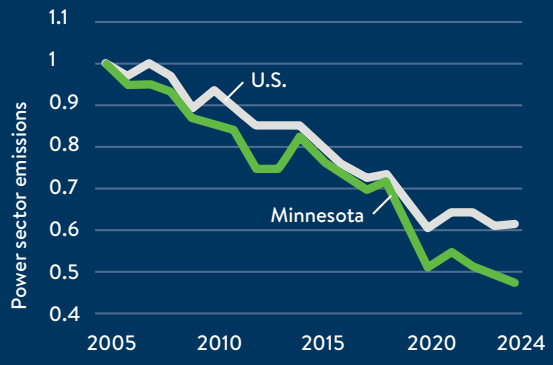
Clean electricity sources are usually the most affordable sources to add electricity to the grid — even after the rollback of federal tax credits. Clean sources of electricity like wind and solar can also be added to our system more quickly than fossil resources. As demand for electricity rises because of data centers, growing industrial uses, and beneficial electrification, adding clean sources to the grid will help Minnesota keep up with demand, keep electricity affordable, and reduce climate pollution. Not burning fossil fuels for electricity also means cleaner, healthier air for Minnesotans to breathe.

Key actions in progress or coming soon:

- 100% carbon-free electricity is state law, and implementation is underway.
- The Minnesota Department of Commerce is working on a study to identify the most cost-effective pathway to implementing the carbon-free electricity law, helping to ensure Minnesotans realize the affordability benefits of 100% carbon-free electricity.

Minnesota power sector carbon emissions vs. U.S. emissions

Our clean energy transition is a Minnesota success story. Climate pollution from our state's electricity sector has dropped 52% since 2005, exceeding the nation's overall 38% reduction.



Source: Bloomberg NEF, EIA. Indexed to 2005 levels

2. Accelerate state policy on transportation sector emissions

Transportation is Minnesota's largest source of GHG emissions, accounting for 29% of total emissions. With elimination of the federal EV tax credits and federal GHG emissions standards for vehicles under rollback, state action is even more critical in reducing climate pollution in the transportation sector.

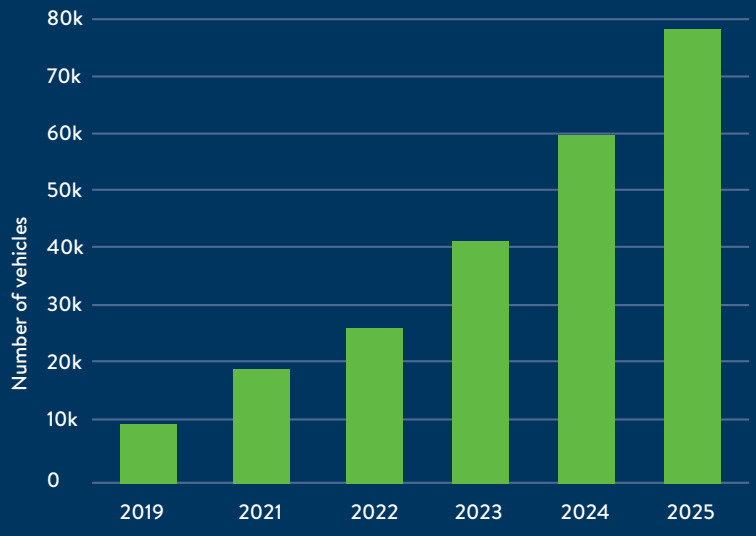
Federal changes will likely slow advances in fuel efficiency, meaning encouraging transportation options other than cars will have an even larger positive climate benefit going forward. Federal rollbacks also mean advancing electrification of passenger vehicles today, while also adopting cleaner fuels for medium- and heavy-duty vehicles that are harder to electrify, will be an even more important state policy focus to achieve climate pollution reduction goals. Minnesota's homegrown feedstocks — along with sustainable fuels infrastructure, sustainable aviation fuels, and clean marine fuels — could provide important economic opportunities for Minnesota's agricultural and forest industries.

Key actions in progress or coming soon:

- The Minnesota Department of Transportation (MnDOT) is leading efforts to expand EV charging stations statewide, making EVs more accessible across urban and rural areas.
- Three new bus rapid-transit lines launched in the Twin Cities metro in 2025, and Greater Minnesota public transit providers are offering more efficient demand-response services to improve access.
- From 2023 to 2024, a statewide work group explored options for implementing a clean transportation standard, including cleaner fuels for hard-to-electrify vehicles.
- Minnesota is taking steps to cut GHG emissions from state roadways by requiring expansion projects to offset emissions and vehicle miles traveled.

Electric vehicle growth (2019-2025)

The number of electric vehicles on Minnesota's roads has jumped eight-fold since just 2019. This measure includes both plug-in hybrid and fully electric models.



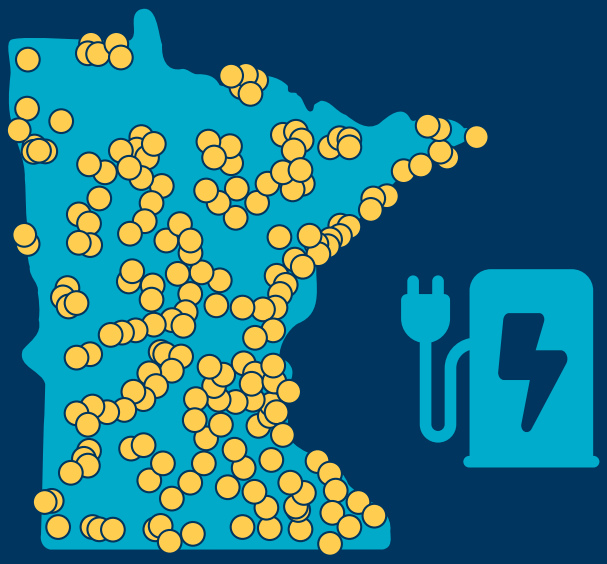
Data: Atlas Public Policy. 2020 data unavailable.

Minnesota EV charging infrastructure

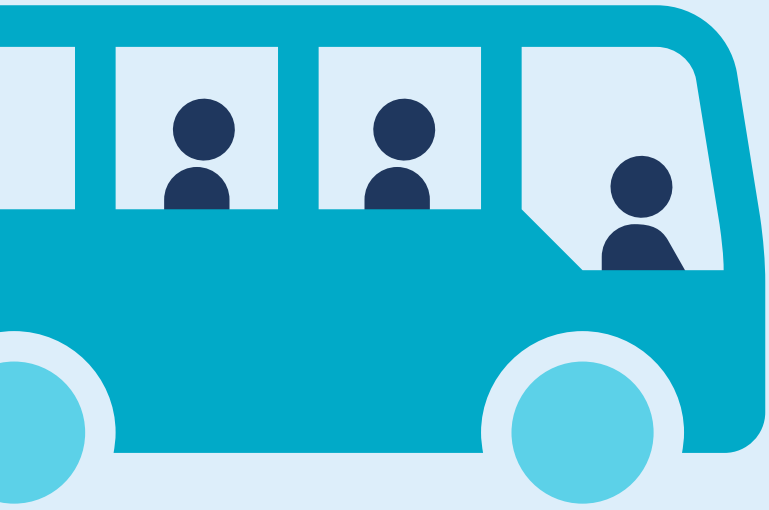
With private, state and federal investment, Minnesota has grown its charging station supply rapidly.

As of 2025, our state has:

- **1,986 level 2 charging ports** (medium speed)
- **852 DC fast charging ports** (fastest speed)



Data: Atlas Public Policy



3. Forge Minnesota's resilience path with sustained funding for planning and implementation

Making infrastructure, community, and home improvements to address accelerating climate change impacts is essential to protecting the health and well-being of Minnesotans. As climate change impacts become more costly, the pace and scale of investment in resilient homes, communities, and infrastructure are increasingly urgent priorities for keeping all Minnesotans safe.

Alongside identifying and prioritizing resilience investments, communities across Minnesota have described the need for sustained, stable funding to accelerate climate preparedness. Rural, Tribal, and small communities, especially, do not always have the resources to plan for and implement climate-resilient infrastructure improvements.

Furthermore, when disaster strikes a community, state government is an essential partner in recovery, especially as federal disaster preparedness and response are being pulled back.

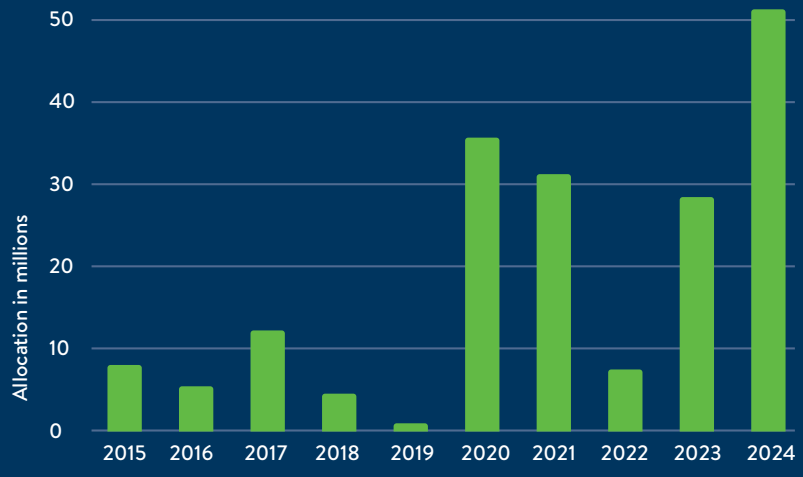
Minnesota has already identified key resilience investments as part of capital planning and disaster preparedness efforts, and this work needs to continue and grow. Even more, the investments needed to keep communities safe in the face of climate change impacts need to be sustained over time and at more predictable levels. At the same time, ongoing work to align the multiple ways state government currently funds communities and infrastructure with Minnesota's climate resilience and equity vision will help pay near- and long-term benefits.

Key actions in progress or coming soon:

- The one-time 2023 investment of $100 million in the Resilience Communities Grant Program provided $4.7 million for planning and $86.5 million for implementation, enabling 71 communities to plan for resilience and 80 to begin implementing priority adaptation actions.
- The Minnesota Pollution Control Agency (MPCA) will soon publish a study identifying the preliminary costs of climate change, including the type and scale of investments needed to protect communities.

Disaster assistance allocation growth (2015-2024)

The Disaster Assistance Contigency Account has more than doubled its average allocation over the last decade.



4. Accelerate clean heat in buildings and industry

Taken together, buildings and industry make up a third of Minnesota's GHG emissions, and these emissions are largely driven by burning fossil fuels for heat. These sectors have also seen the largest increases in GHG emissions since 2005. Accelerating work on clean heat will be essential for achieving Minnesota's carbon-neutrality goal.

Many cost-effective solutions exist to begin addressing GHG emissions related to heat, and implementing these solutions at larger scales will reduce both climate pollution and energy costs. Minnesota also has a solid foundation for reducing climate pollution from new and upgraded buildings as building codes strengthen building efficiency over time.

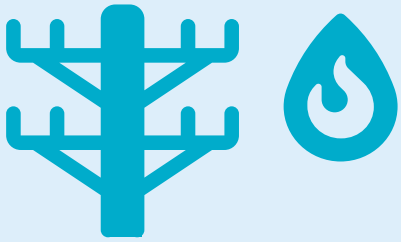
Accelerating clean heat deployment will require increasing clean heat investment in an equitable way. Moving to clean heat in Minnesota will take a range of strategies including building efficiency, electrification of heat, networked geothermal, district heating powered by clean energy, and faster weatherization to help keep families with lower incomes healthy and comfortable in their homes while reducing climate pollution.

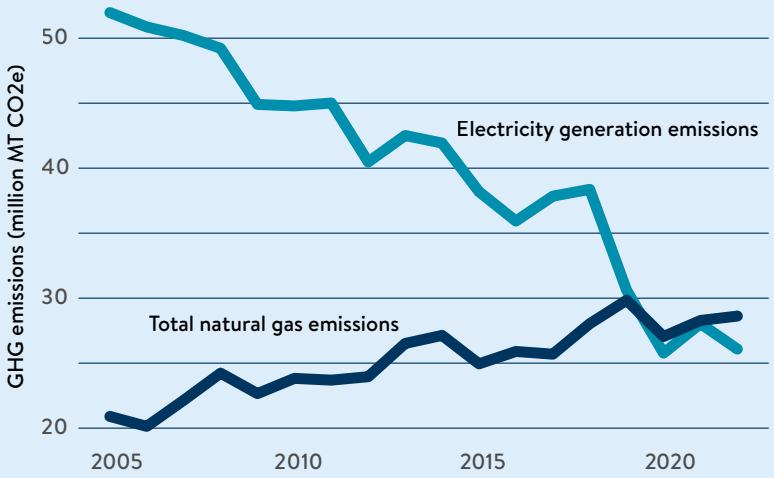
Key actions in progress or coming soon:

- MPCA, working with several other agencies, is working to complete a report and strategy map of how to reduce GHG emissions in the industrial sector.
- Minnesota is using federal funding to reduce industrial sector GHG emissions in food processing facilities.
- Commerce is advancing initiatives for home heating and weatherization, including Inflation Reduction Act rebates, heat pump rebates, and state Energy Conservation and Optimization Programs.
- Minnesota's two largest gas utilities are pursuing pilot projects through the Natural Gas Innovation Act to invest in technologies that reduce emissions from the natural gas system and end-uses.

Total emissions from natural gas vs. electrical generation

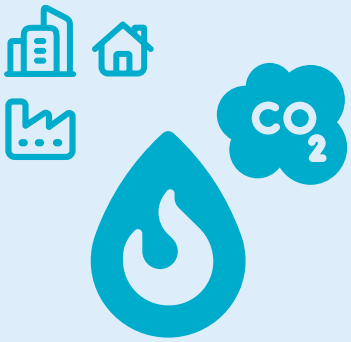
Our state's electricity generation has rapidly decarbonized, even as the economy has grown. But natural gas use has risen, needing our attention.

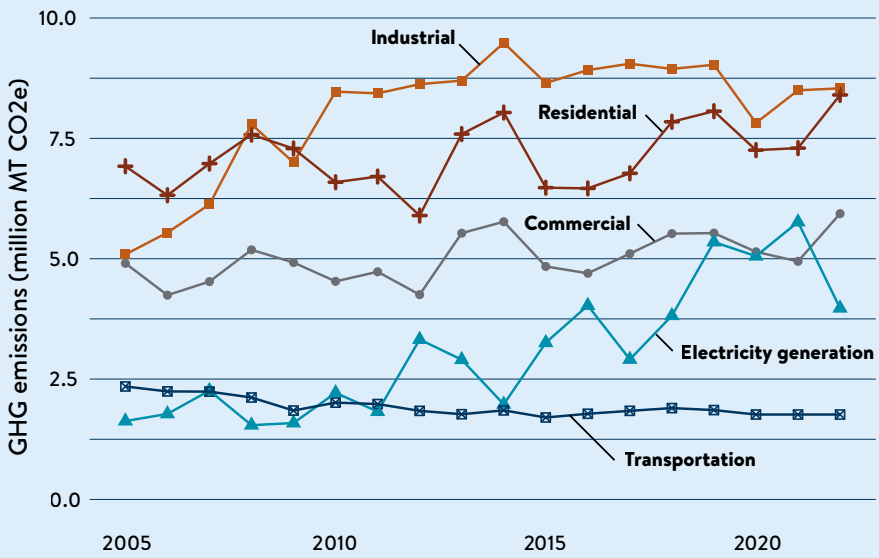




Natural gas emissions by sector

Commercial, industrial, and residential sectors need special attention as the state tries to decarbonize and shift to electrification.





5. Expand efforts to reduce and offset agricultural emissions, restore peatlands, and sustainably manage forests

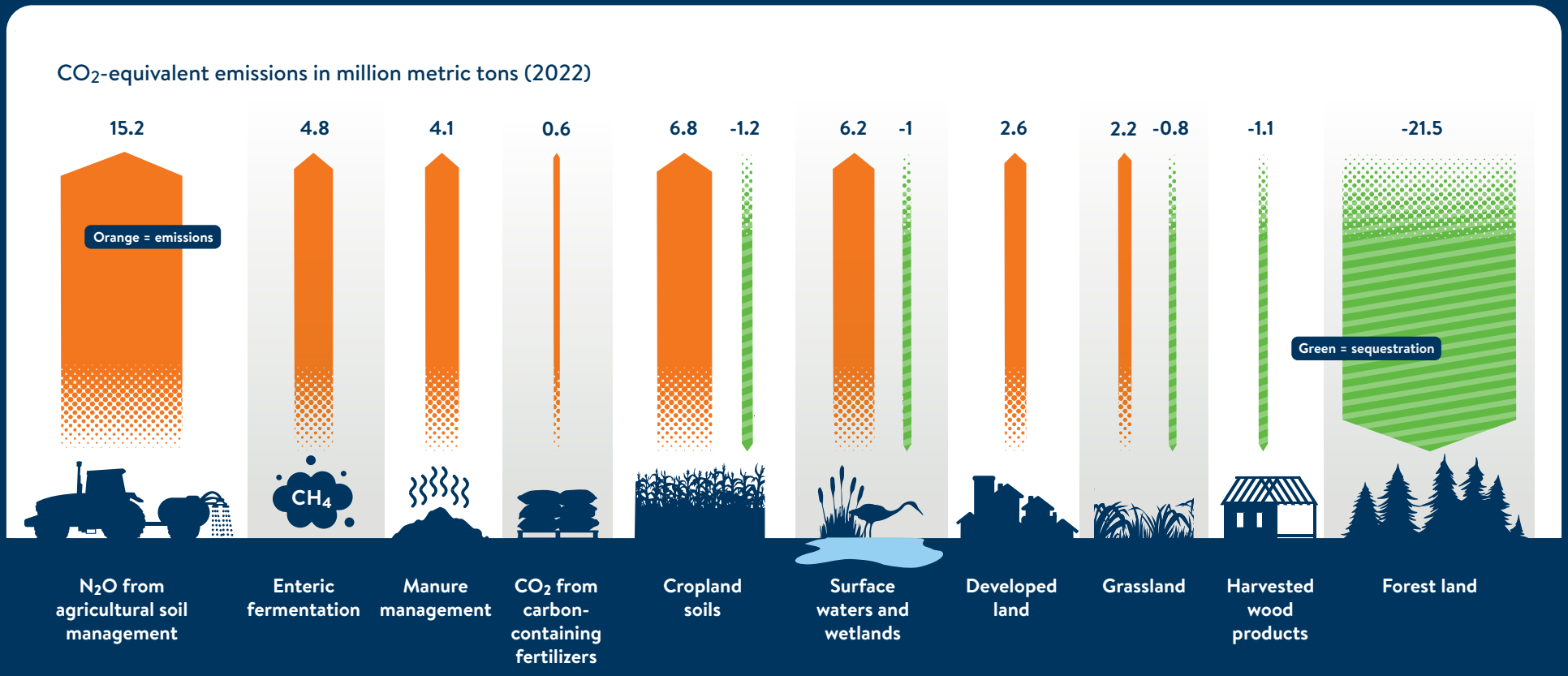
Agriculture is Minnesota's second largest source of GHG emissions and plays a role in reducing emissions through climate-smart practices. Minnesota is also fortunate to have both natural and working lands that are carbon sinks, which are essential for achieving carbon neutrality in the state.

Managing lands in ways that increase carbon uptake and storage is well underway in Minnesota. At the same time, GHG forecasting suggests that sustaining — and increasing — this carbon sink will require ongoing, active management. For example, the carbon storage dynamics of forests of different ages vary. Also, older forests are more susceptible to current and future stressors such as wind, wildfire, insects, and disease. Given this, the modeling results suggest that maintaining and enhancing the carbon sink provided by Minnesota forests will require active management to ensure a diversity of forest ages and species across the landscape.

Key actions in progress or coming soon:

- Minnesota has received federal funding to build on and scale up state investments in climate-smart agriculture practices and peatland restoration to reduce GHG emissions and store more carbon in lands.
- Efforts are underway to maintain and enhance community forests and incorporate climate as a value into forest management planning involving state lands.

GHG emissions and sequestration from natural and working lands



Natural and working lands are continuously exchanging GHGs with the atmosphere. Much like summing deposits into and debits from a checking account yields the account balance, summing annual emissions (as a positive number) and sequestration (as a negative number) yields the net GHG emissions for a given year.

6. Develop and implement a financing strategy for equitable clean energy transition

To make the full transition to carbon neutrality, making sure all Minnesotans are part of that transition is essential. Ensuring equitable access to clean energy means all Minnesotans can access the benefits of clean energy, like lower operating costs and better health. Equitable access also helps make sure that some Minnesotans don't pay more for legacy energy systems. Minnesota's climate investment strategy needs to have a strong focus on affordability and equity as the state aligns and unlocks financing.

The transition to a clean energy, carbon-neutral Minnesota will take investment from both the public and private sectors. As federal investments in clean energy have been pulled back, Minnesota needs to step forward to reach our climate goals and ensure affordability in our energy system. Together, the state and other financing partners can chart a path forward in a shifting clean energy financing landscape. The strategy will require thinking about how to use public money to catalyze and leverage private investment.

Key actions in progress or coming soon:

- The Minnesota Climate Innovation Finance Authority (MnCIFA) was established in 2023 to catalyze investments in clean energy, with an emphasis on investments for equity in energy. Through its lending, MnCIFA has already leveraged millions of dollars in public and private investments to advance clean energy projects.
- In 2026, MnCIFA will update its investment strategy through engagement with communities across Minnesota, encompassing local and state governments, private and public financing entities, advocates for equity in clean energy, Tribal Nations and more to expand the state's efforts to further accelerate investments in equitable and clean energy projects.
- Expanding private and philanthropic capital for green financing in Minnesota is a key objective and critical need to fulfill MnCIFA's mission and to advance Minnesota's Climate Action Framework to ensure all Minnesotans benefit as our state transitions to a clean energy future.

Impacts on Minnesota

Since Minnesota launched the Climate Action Framework in 2022, the impacts of climate change have continued to hit close to home. The winter of 2023-2024 was the warmest on record, with temperatures averaging 13.5°F above normal. Most areas in the state received less than half of their normal snowfall. These conditions had a significant negative impact on Minnesota's winter recreation economy, leading many small businesses to seek support in emergency loans from the federal Small Business Administration.

Minnesotans can expect to see more warm winters. In fact, Minnesota winters are warming faster than nearly any other state in the contiguous United States. Minnesota's average winter temperature has warmed 5°F since 1970 and lakes have lost an average of 10 to 14 days of ice cover in the past 50 years.

Minnesota's summers are anticipated to get hotter and more humid in the years ahead. These changes can be especially dangerous for outdoor workers, athletes, pregnant people, kids, and older Minnesotans. Once focused on the spring and fall, "wildfire season" — and the associated firefighting activities — is now a nearly year-round endeavor. In 2023, Minnesota issued a record 20 air quality alerts because of wildfire smoke from fires in Minnesota and far beyond our borders — a reality we can expect to see more with air quality worsening during our summer months.

Each of these changes threatens the things we love most about our state. Our homes. Our lakes and rivers. Our outdoor recreation and traditions. And our vibrant seasons. Climate change also threatens the viability of walleye, wild rice, moose, and other plants and animals that are vital to the livelihoods of the Tribal Nations in Minnesota.

To make Minnesota the best place to live, work, and raise a family, we must prepare for these changes and continue to take urgent action to bring the Climate Action Framework to life and reduce pollution that causes climate change and impacts our health.

Our commitment to equity

Acknowledging the unequal burdens of climate change

Climate change affects everyone, but its impacts are not felt equally. Black, Indigenous, people of color, people who have lower incomes, and other historically marginalized communities, face greater risks from climate hazards but are least responsible for the causes of these hazards. The Climate Action Framework refers to groups of people facing these unfair social, economic, and environmental stressors as **overburdened communities.**

Overburdened communities

are groups of people who experience disproportionate social, economic, and environmental stressors because of long-standing systemic inequities. These communities — often including Black, Indigenous, people of color, people with lower incomes, rural communities, and other historically marginalized groups — face greater risks from climate hazards despite contributing the least to climate change.

In general, **people at greater risk of climate change-related harms** include (but are not limited to) those who:

- Are from historically marginalized groups, particularly those who are Black, Indigenous, Latine or Hispanic, Asian American, and people of color
- Face high energy burdens, for whom household energy costs are 6% or more of annual household income
- Are experiencing homelessness
- Are older adults, infants, children, or teens
- Are pregnant
- Have a disability, access or functional needs, or are homebound
- Are affected by chronic health conditions or other illnesses
- Are immigrants or refugees, especially those who lack the rights of citizenship
- Are English language learners
- Have lower incomes or are experiencing poverty
- Live in manufactured homes or rental housing
- Work outdoors (e.g., agricultural or construction workers)
- Work indoors in non-cooled spaces (e.g., warehouse workers)
- Are incarcerated or formerly incarcerated

However, it is important to remember that not everyone considered part of an overburdened community experiences risk in the same way; more definite terms should be used where possible. Additionally, people who depend on the environment for economic and social prosperity, such as many rural communities, wild rice harvesters, and people who fish or own fishing-related businesses, are uniquely vulnerable to climate change impacts.

Examples of how climate change disproportionately impacts overburdened communities

Unequal exposure to pollution

Today, traffic pollution is 145% higher in census tracts where at least 40% of residents are people of color compared with the Minnesota average. Breathing polluted air every day causes health impacts like respiratory disease, which puts people at greater risk during extreme heat and wildfire smoke events.

Higher heat risks for communities of color

In Minneapolis, formerly redlined areas are 11°F hotter on average than non-redlined areas, because they tend to have more heat-trapping pavement, fewer trees and green spaces, and less shade. These areas retain heat, even overnight when temperatures drop, creating what is called the urban heat island effect. Higher outdoor temperatures increase cooling costs, can make people sick, and heighten risks during extreme heat and when air quality is poor due to wildfire smoke.

Barriers to energy-efficient housing and improvements

Historical and ongoing discrimination in home buying has limited access to cost-saving weatherization programs and energy-efficiency upgrades for Black, Asian, Hispanic and other Minnesotans of color. As climate change drives more extreme heat and other weather events, these gaps leave households facing higher energy costs, less protection from temperature extremes, and greater exposure to climate-related risks. Renters face additional disadvantages because property owners often lack incentives and/or resources to invest in improvements that primarily benefit tenants.

Uncertain access to resources

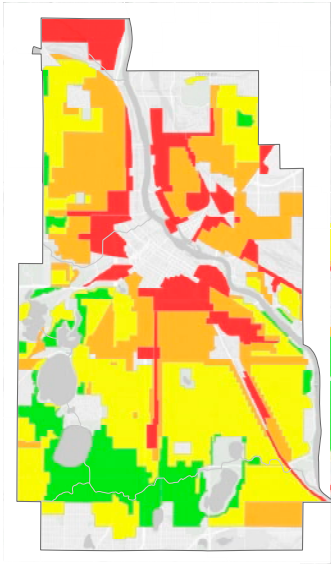
Climate change threatens the natural resources and landscapes that Indigenous communities, recent immigrants, farmers, and others rely on for income, food, cultural traditions, and spiritual practices.

Past decisions can influence today's climate risk

In the 20th century, banks used a practice called redlining to restrict property loans in racially mixed and predominantly Black neighborhoods, depressing home values and limiting home ownership and investment. Harmful transportation decisions — such as routing freeways through Black neighborhoods — further reinforced segregation and disinvestment. Together, these policies concentrated communities of color and low-income residents near highways and other pollution sources, increasing their exposure to environmental hazards and climate impacts.

Minneapolis redlining 1945

Eighty years ago, the federal government created maps that rated mortgage lending risk. Areas with more people of color and poverty were deemed "hazardous" and were redlined by lending institutions.



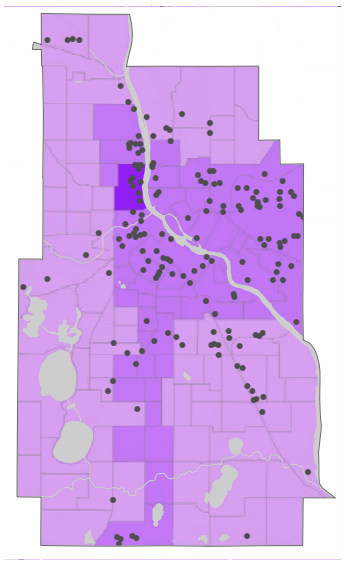
Investment risk ratings by the Home Owners Lending Corporation (HOLC), a federal agency in the 1940s.

HOLC grade

- "Good"
- "Hazardous"

Air pollution in Minneapolis today

Air quality is often worse in communities that are home to many people of color and those with low incomes. Pollution sources, which include businesses and busy roads/highways, tend to be concentrated in these areas.



MPCA air pollution score

Higher scores means less healthy air.

- 0-1
- >1-2
- >2-3
- >3-6
- >6-15

Regulated facilities

Higher costs

Rising home energy bills, especially during increasingly hot summers, place a disproportionate financial burden on people who have low incomes, who live in urban heat islands, or whose homes need repair or weatherization. Their energy burden — or percentage of annual household income used for energy costs — is often 6% or more, three times higher than average Minnesota households.

Conversely, some Minnesotans may benefit from economic opportunities related to climate action and may have greater access to climate change decision-making.

Our commitment to equity

Addressing the unequal burdens of climate change, and understanding the experiences of overburdened communities, is essential to ensuring all Minnesota communities are resilient, healthy, and prosperous.

The following initiatives, explained in greater detail in Goal 5, Initiative 5.6, are foundational steps to address the root causes of inequitable climate impacts and empower overburdened communities for lasting change:

- **Empower communities in climate action.** Strengthen community power in climate action, create reliable systems for collaboration, improve cross-sector coordination, build trust, and incorporate community priorities into decision-making.
- **Distribute funds and resources equitably.** Prioritize distribution of funds and resources to communities facing disproportionate climate impacts and address barriers to access.
- **Integrate climate resilience and health equity into decision-making.** Align climate actions and state programs to accelerate climate resilience, health, and equity and to avoid unintended harm.

Examples of action steps that ensure equitable distribution of climate action benefits and protection from the negative impacts of climate change include:

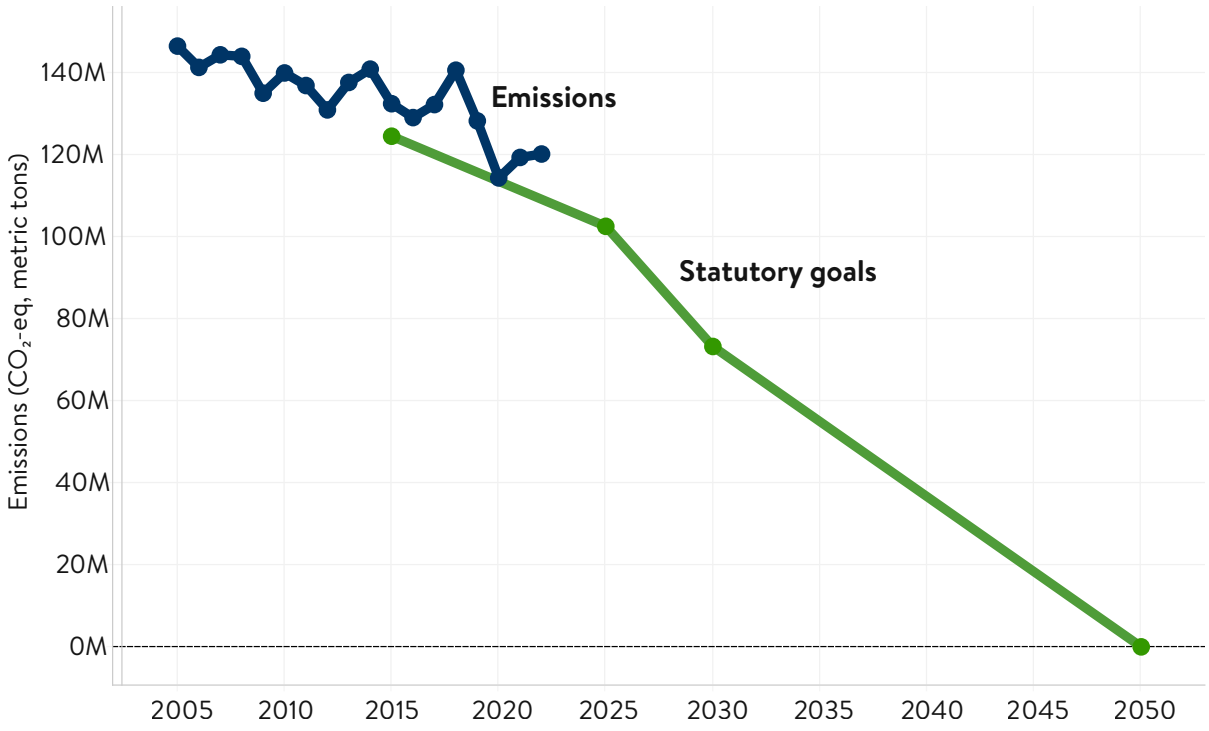
- **Improve access to energy and cost saving programs.** Improving access to programs — such as energy assistance, pre-weatherization, weatherization, rebate programs, and efficiency incentive programs — and stacking the delivery of services to maximize financial savings and minimize disruptions in homes.
- **Reduce energy burden.** Prioritizing policies and programs for affordable, clean energy.
- **Promote local agriculture.** Promoting Tribal, local, and community-based agriculture to support economic vitality and increase access to healthy, fresh food, especially in overburdened communities.
- **Provide affordable clean energy technology for businesses.** Ensuring businesses of all sizes and in all communities can access support to adopt clean technology through affordable financing programs like those offered by the Minnesota Climate Innovation Finance Authority.
- **Improve worker safety during extreme heat and poor air quality.** Making sure all workers stay safe in the face of increasing climate change impacts like extreme heat and unhealthy air quality.
- **Support emerging farmers.** Continuing and expanding the Emerging Farmers Office and similar programs for farmers and agricultural/food entrepreneurs, with particular attention to advancing inclusion and equity.

Current greenhouse gas emissions

The urgency of climate action is underscored by Minnesota's 2025 GHG inventory, which documents emissions from 2005 to 2022. Minnesota's emissions have decreased 18% since 2005, but emissions increased 5.1% between 2020 and 2022. The COVID-19 pandemic changed how Minnesotans lived and worked in 2020 and 2021, reducing emissions. As Minnesotans returned to pre-pandemic routines, emissions that dropped steeply in 2020 rebounded, reflecting a national trend. Minnesota's largest source of GHG emissions is the transportation sector, followed by the agriculture, electricity, and industrial sectors.

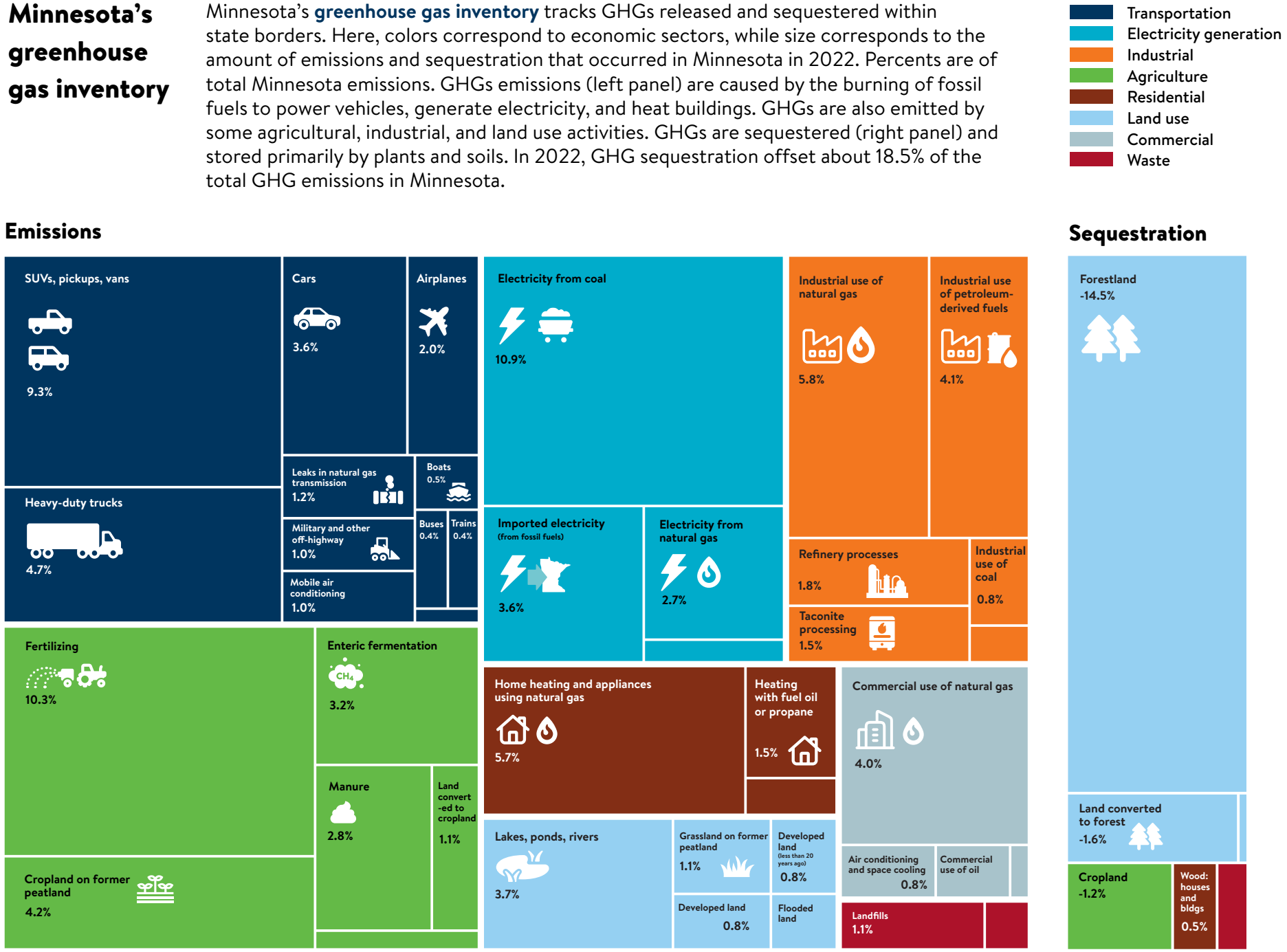
Despite the rebound, emissions from sectors such as transportation and electricity remain below 2019 levels. Minnesota is making progress, but we must accelerate our actions to meet our state's climate goals.

Historical net statewide GHG emissions (2005-2022) and statutory targets



Minnesota's greenhouse gas inventory

Minnesota's **greenhouse gas inventory** tracks GHGs released and sequestered within state borders. Here, colors correspond to economic sectors, while size corresponds to the amount of emissions and sequestration that occurred in Minnesota in 2022. Percents are of total Minnesota emissions. GHGs emissions (left panel) are caused by the burning of fossil fuels to power vehicles, generate electricity, and heat buildings. GHGs are also emitted by some agricultural, industrial, and land use activities. GHGs are sequestered (right panel) and stored primarily by plants and soils. In 2022, GHG sequestration offset about 18.5% of the total GHG emissions in Minnesota.



Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Forecasting greenhouse gas emissions, health impacts, and economic outcomes

In 2023, the Minnesota Pollution Control Agency requested and received state and federal funding for GHG emissions forecasting and benefits analysis of climate pollution reduction strategies. A GHG emissions forecast is an estimate of future GHG emissions based on a set of assumptions about policies, populations, economic growth, and other activities that influence emissions. Forecasting helps define GHG reduction targets, estimate potential emission reductions from specific climate actions, and plan climate actions for the long term. In addition, the Climate Change Subcabinet completed health and economic modeling based on the GHG emissions forecasting. Together, GHG forecasting and health and economic modeling are tools to help better understand different options and foster more effective climate policy decision-making.

The Subcabinet worked with the University of Maryland Center for Global Sustainability to forecast GHG emissions using the Global Change Analysis Model (GCAM). Emissions and sequestration from agriculture and land use, land-use change, and forestry were forecasted in a parallel process led by MPCA, with input and feedback from the interagency Natural and Working Lands Goal Team, and integrated with GCAM. This forecasting work complements the state's GHG emissions inventory, which is released every other year and estimates historical emissions to track progress toward the state's carbon-neutrality target.

The forecasting process develops scenarios based on defined sets of assumptions to analyze the pace and scale of action needed to achieve carbon neutrality by 2050.

The forecast has three core scenarios:

Current Policies scenario: This scenario estimates how effective current actions and state and federal laws could be in achieving carbon neutrality.

Potential Policies Pathway scenario: This scenario illustrates a set of policies used in other states or countries that could get Minnesota substantially closer to its GHG emissions reduction goals. The policies and actions modeled in this scenario cross Climate Action Framework goal areas. This scenario was developed in a bottom-up process, meaning the model considered a suite of ambitious potential policies to add on top of current policies. It is not intended as a specific proposal, but rather an illustration of the pace and scale of action needed as we move toward achieving Minnesota's climate targets.

Net-zero scenario: This scenario builds on the Potential Policies Pathway Scenario and requires the model to achieve Minnesota's GHG emissions targets. The net-zero scenario uses the least-cost path, but does not define specific policies to achieve this path.

The federal climate policy landscape changed dramatically during the framework update process. Therefore, two variations were developed to help make sense of the path forward:

- **Before federal climate rollbacks** includes all climate investments in the Inflation Reduction Act and Infrastructure Investment and Jobs Act and pre-2025 climate rules under the Clean Air Act.
- **After federal climate rollbacks** removes the climate investments in the Inflation Reduction Act and Infrastructure Investment and Jobs Act that were rescinded in 2025. This variation also includes substantial Clean Air Act rule changes proposed by the Environmental Protection Agency (EPA) including changes in GHG emission rules for electric generating units and vehicle emissions standards. While these Clean Air Act rule changes are not yet complete, including them in the federal climate rollbacks scenario reflects the anticipated outcome of these rule changes.

Unless directly comparing the impacts of federal policy rollbacks, all analysis is based on the variations in which the 2025 rollbacks were applied.

In addition to the GHG impacts of policies, the forecasting also explored the potential economic and health impacts of different climate action scenarios. MPCA and the Department of Employment and Economic Development (DEED) led this effort, using the COBRA and REMI PI+ models. Key takeaways from the forecasting work are included below.

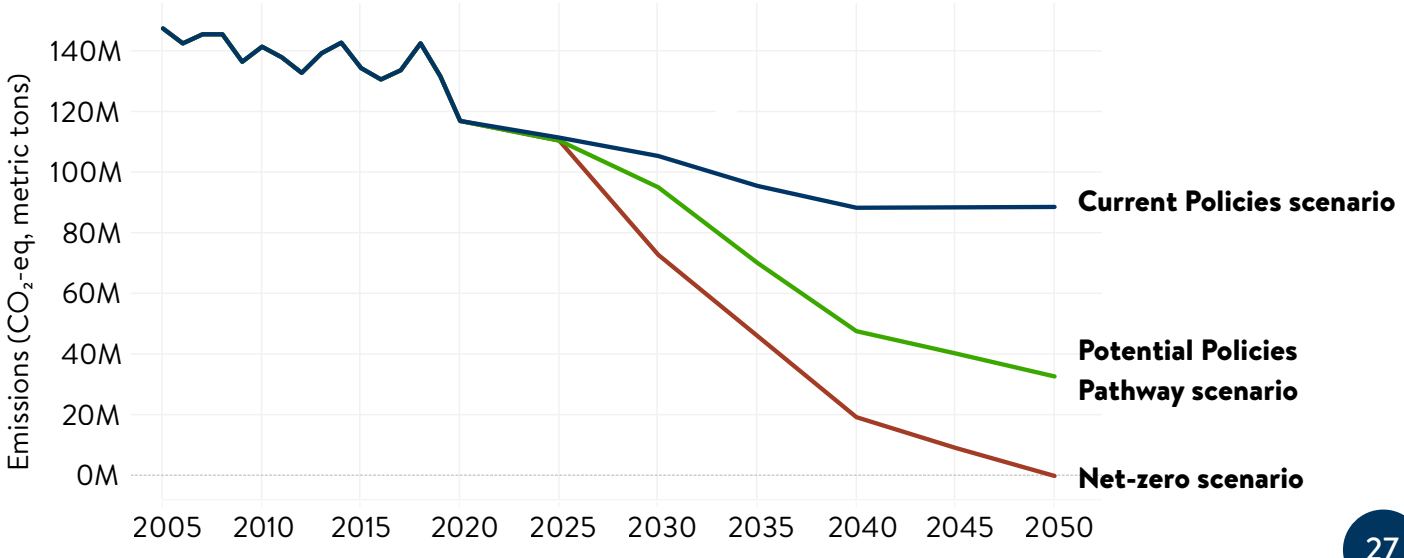
Key takeaways from GHG forecasting and economic and health analysis

Overall takeaways

Minnesota has made progress on GHG emissions reductions, but achieving the statutory targets will require increased pace and scale of climate action across all sectors. The good news is that investing in accelerated climate action beyond current policies will make Minnesotans healthier and continue to deliver strong economic growth.

Full implementation of Minnesota's current policies would reduce GHG emissions 39% by 2050 relative to a 2005 baseline. The Potential Policies Pathway scenario would achieve a greater reduction in GHG emissions, reducing GHG emissions 77% by 2050.

Historical total statewide GHG emissions (2005-2020) and projected (2020-2050) emissions under the Current Policies and Potential Policies Pathway scenarios, compared to statutory GHG emission reduction targets.



The more ambitious Potential Policies Pathway scenario is projected to result in greater improvements in Minnesota's air quality and thus greater health benefits than the Current Policies scenario. By 2050, a conservative estimate of the additional health benefits of the Potential Policies Pathway scenario over current policies include the following benefits per year:

- $1.17-2.28 billion in total health benefits
- 86-173 fewer early deaths
- 378 fewer new cases of asthma
- 66,400 fewer asthma symptom days
- 12,000 fewer work loss days
- 14,100 fewer school loss days

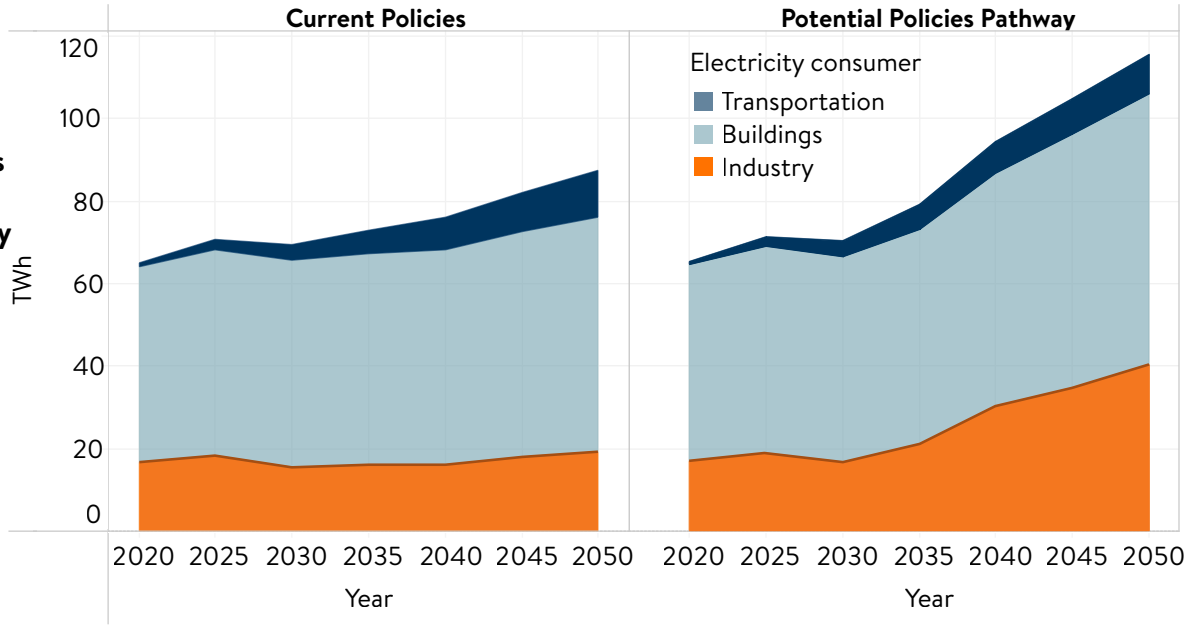
Forecasting results suggest that Minnesota can reduce GHG emissions and improve health while maintaining a strong economy.

At the same time, economic growth overall is forecasted to be strong under both the Current Policies and the Potential Policies Pathway scenarios with steady increases in economic growth and increases in income. Both the Current Policies scenario and the Potential Policies Pathway scenario also result in job gains across many occupations. In other words, the forecasting results indicate that Minnesota can reduce GHG emissions and improve health while maintaining a strong economy.

Essential actions for reducing emissions

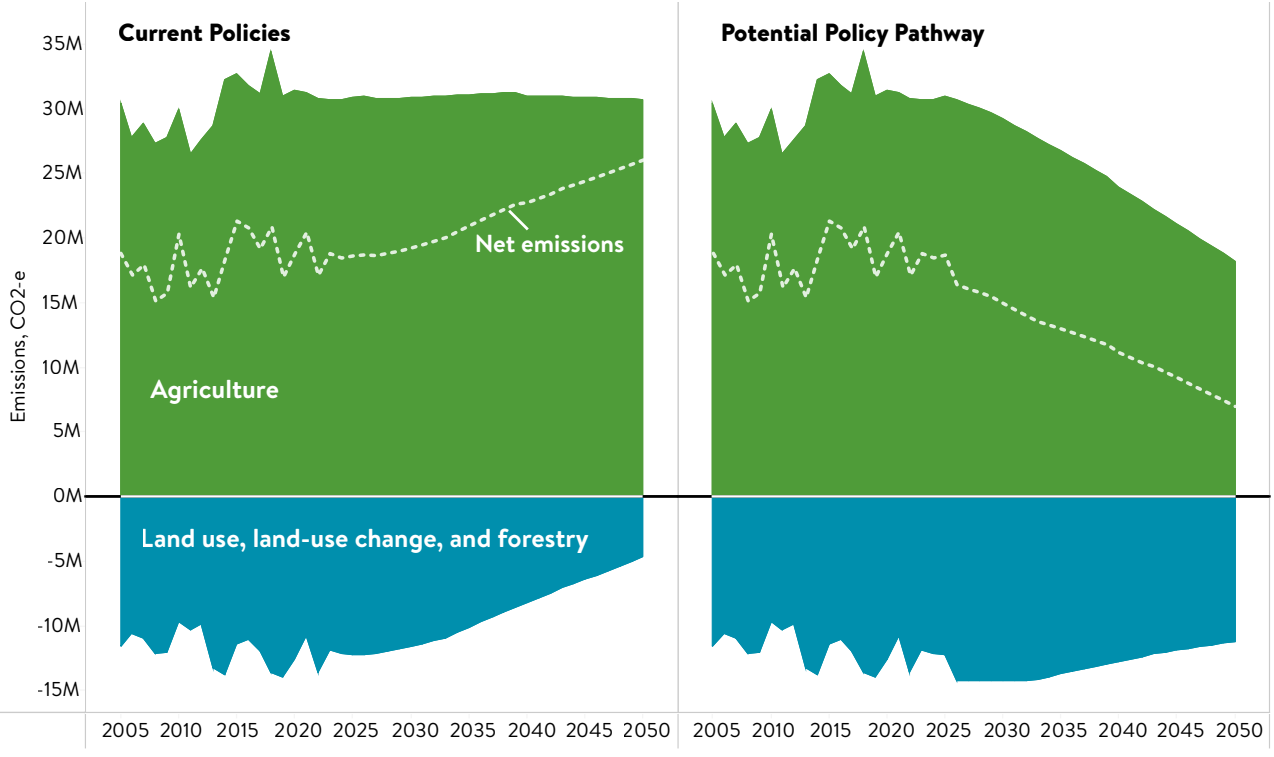
Decarbonizing and expanding electricity generation are essential to achieving Minnesota's GHG emissions reduction goals. Reducing emissions in transportation, buildings, and industry requires increased efficiency and the use of clean electricity to power these sectors. The forecasting shows that to make rapid progress toward state goals, Minnesota needs to continue to both reduce carbon in the electricity sector and produce more clean electricity to power other sectors. Notably, this increased demand for electricity is forecasted to happen in addition to any potential demand from new data centers in the state, which could lead to substantial additional electricity demand.

Electricity consumption by consumer under the Current Policies and Potential Policies Pathway scenarios.



Sustaining and increasing carbon sequestration in Minnesota's lands will continue to be essential to achieving carbon neutrality and will take added effort to maintain. Minnesota currently benefits from significant net sequestration in natural and working lands in the state. Given Minnesota's aging forests and ecological changes driven by climate change, such as increased emissions from warming peatlands, the pace of this sequestration is under threat. While the forecasting includes significant uncertainties, it points to the importance of stewarding healthy lands to maintain carbon sequestration in agricultural soils, forests, grasslands, and wetlands to help offset some GHG emissions in other sectors.

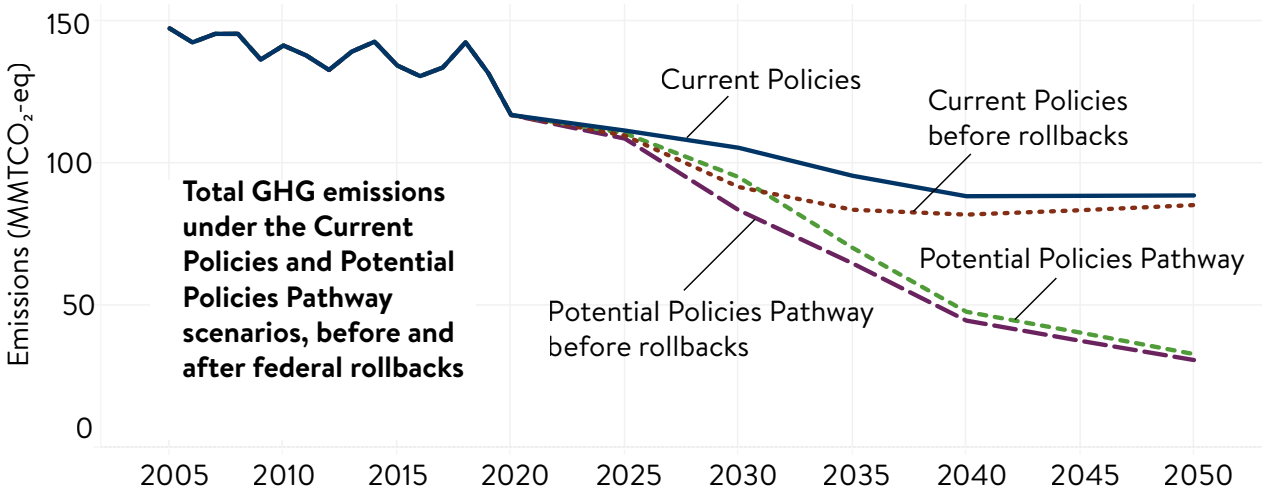
Net GHG emissions from the agriculture (green) and land use, land-use change, and forestry sector (blue) under the Current Policies and Potential Policies Pathway scenarios.



Federal climate rollbacks have an impact on GHG emissions reductions and energy costs

Rollbacks in federal climate policy — both federal investments and regulations — will make reducing GHG emissions more difficult and will lead to slower emissions reduction in the near term. These federal rollbacks also will lead to higher costs and worse health outcomes. Specifically, lower federal investment in clean energy and associated infrastructure means higher GHG emissions in the near term and a higher cost burden on electricity ratepayers. Proposed rollbacks of federal regulations that drive fuel efficiency and electrification of transportation will:

- Make achieving GHG emissions reduction in the transportation sector more difficult.
- Likely leave drivers paying for more gas to travel the same distance in a vehicle.
- Likely result in a loss of $125 million to $160 million in annual monetized health benefits by 2050, leading to more early deaths and other, less severe, negative health outcomes.



Certainty matters — it drives investment

Minnesota's rapid GHG emissions reduction in the electricity sector from 2005 to the present demonstrates what is achievable with focused policy and targeted investment over years. Even more, progress can come faster than what was originally imagined. This lesson can be applied in other sectors.

Overall, the GHG forecasting shows that ambitious policies can reduce GHG emissions over time, save lives, reduce costs from health impacts, and maintain economic growth. Achieving these outcomes requires a shift in our investments, which requires certainty over time.

Many private and public investors want greater certainty about the future financial and regulatory environment to shift toward investments that reduce pollution from energy, transportation, buildings, and industry. Certainty around future investments in Minnesota can come from ongoing public commitments to climate pollution reduction incentives, strategies, or regulations. These commitments are essential to achieving Minnesota's GHG emissions reduction goals.

For a more detailed look at the methodology and results of the GHG forecasting and health and economic impact analyses, see the **forecasting supplementary document**.

The 2026 framework will make us more resilient and grow our economy while saving Minnesotans money, improving our health, and reducing pollution.

Improving our health and economy through climate action

The essential role of local government

Minnesota's local governments play a critical role in Minnesota's climate mitigation and adaptation work. Meaningful, on-the-ground change is increasingly led at the local level — directly, through incentives, or by example. Climate action can be incorporated into how local governments deliver services to their communities, and it often provides benefits such as operational cost savings, flood risk reduction, and equipment and infrastructure upgrades. Minnesota needs local government action and leadership if it is to meet resilience and state emissions reduction targets.

Local governments, and locally tailored climate action, are often best positioned to respond to and address community needs, settings, and values. In addition, local government units hold unique powers and responsibilities that position them to make lasting climate progress. These powers and responsibilities include:

- **Cities, townships, counties:** Land use planning, right-of-way control, infrastructure and transportation planning, emergency management.
- **School districts:** Facility investments, public engagement, resilience planning.
- **Soil and water conservation districts and watershed districts:** Land management, drainage systems, water conservation, carbon sequestration practices.
- **Regional development organizations:** Intergovernmental coordination, funding, and collaboration.

Local climate progress is most effective when the state supports these efforts by:

- Providing funding, policy supports, data, and expertise.
- Employing incentives and requirements leading to coordinated local climate action.
- Collaborating with local government leaders and staff to align state and local climate targets and strategies.
- Co-developing best practices and model ordinances that incorporate sustainability and climate action.

*For a more detailed look at the role of local government in climate action, see the **local government supplementary document**, which was developed through engagement with local government leaders.*

Moving forward — accelerating action and reporting on our progress

Achieving Minnesota's climate vision requires large scale, collective climate action around the state. Actions will be led by individuals, communities, organizations, and governments at all levels.

Clearly defining where we want to go — using key desired results and measurable targets — and then tracking and reporting on how our actions are leading to overall progress is critical. Everyone needs to see what work is being done and how it is moving us toward our vision and goals. In this updated framework, the Climate Change Subcabinet has leaned into the challenge of developing metrics and targets and reporting on them.

The Climate Change Subcabinet plans to track progress and share information showing both the state agencies' climate efforts and the ultimate effects of our work when combined with collective actions.

- **Efforts** — Showcase actions the state is taking to advance work described in each goal chapter. This will tell Minnesotans whether and how we are implementing our climate strategy.
- **Effects** — Provide information on progress toward our climate vision. In other words, is Minnesota becoming carbon neutral, resilient, and equitable? Minnesotans will be able to see how collective efforts are making people and the environment better off.

The key desired results and the targets included in the framework are focused on big picture results connected to the climate vision and, in some cases, large initiative areas for each goal. Each of the seven goal chapters identifies key desired results and targets to help define and measure progress. A supplementary document includes more detail, including the metrics and data sources for targets.

- **Key desired results** — The most important outcomes to be achieved from the collective efforts of governmental, public and private partners across the state.
- **Metrics** — The measurable units used to track progress toward the key desired results.
- **Targets** — A desired level of achievement for a metric. Setting targets includes identifying a level of achievement, a deadline by which progress should be achieved, and a baseline year against which progress will be measured.

Notably, the metrics and targets for each framework goal are not uniformly developed. These differences result from the range of framework goals and factors such as variation in climate policy development and data availability. Some sectors and policy areas have a long-standing focus on climate issues. For example, policies to reduce GHG emissions in the electricity sector have developed over decades. This sector has a significant regulatory structure, leading to well-developed metrics and targets. Reducing GHG emissions in the industrial sector is a more recent focus, so metrics and targets are not as well developed in this goal area. However, both these sectors are included in the Minnesota GHG emissions inventory.

State law requires Minnesota to report on GHG emissions every other year, and the state has developed a robust approach to tracking this metric over years. Metrics and targets around GHG emissions are easier to develop because of this work. Resilience metrics, on the other hand, do not yet have an approach to measuring and tracking progress that is as well-developed and agreed-upon. Metrics and targets may need to be adjusted over time to ensure they best represent the work being done.

The desired results, metrics, and targets are meant to be ambitious. None of them can be accomplished by state agencies alone — and the same is true of the framework vision and goals.

To accelerate action across sectors and across geography, the Climate Change Subcabinet plans to hold a climate action convening in summer 2027 — approximately 18 months after publication of the updated framework. Sharing, and reflecting on, our collective progress will help catalyze further action.

The convening will bring Minnesotans together to review progress, share learnings, mobilize resources, and recommit to ambitious climate action. It will highlight the roles each of us play, and how we can act both as individuals and collectively to secure a safer, healthier future for all Minnesotans. The convening will also be an opportunity to share commitments of support and resources for further action.

Central to the convening will be a check-in on progress made toward Minnesota's climate vision and the goals and targets supporting this vision. Participants can also consider how to improve and update metrics and targets as needed.

In addition to targets in each chapter, a supplementary document of metrics and targets for each goal area is included in the update. This document will serve as a foundation for the first round of reporting on progress at the summer 2027 Climate Action Convening.

For more information on the key desired results, metrics and targets, see the **targets supplementary document**.

Tribal coordination

Tribal coordination

In the two years leading up to the 2026 Climate Action Framework, the Climate Change Subcabinet employed a Tribal-State coordinator to meet with leaders, staff, community members, and others across Tribes in Minnesota and incorporate Tribal priorities and perspectives into the state's climate planning efforts. This included a series of virtual Tribal Coordination Conversations centered on the framework goals.

To develop the content for this section and the goal chapters, the coordinator worked with a Tribal Coordination Team. This team convened government-to-government forums, hosted the Tribal Coordination Conversations, and organized virtual and in-person one-on-one meetings to gather Tribal perspectives.

It is the hope of this team that the content is representative of Indigenous voices, useful for Tribal Nations, and reflective of Tribal climate priorities. The team would like to thank and acknowledge all who helped bring forth their thoughts, ideas, and perspectives for this document — Pidamaya, Miigwech!

Dakota and Ojibwe Tribal Nations of Minnesota:

Acknowledging history, recognizing sovereignty, honoring responsibility

The Dakota and Ojibwe people, whose cultural and spiritual practices and identities are interwoven with the landscape, hold this land sacred. The State of Minnesota shares its geography with and is home to 11 Tribal Nations. Many other Tribes also acknowledge Minnesota as important to their Tribal histories. The State of Minnesota recognizes and respects inherent Tribal sovereignty and holds itself accountable to counter the historical and contemporary injustices that continue to impact Indigenous people.

Climate change is impacting Tribes in many ways, including by pushing culturally significant species outside of Tribal boundaries and ceded territory areas. Tribal Nations and their communities cannot traditionally hunt, fish, and gather outside of Tribal boundaries established during the Treaty Making Era (1837-1867). Upholding treaty rights and responsibilities in all state decisions, public processes, and policies is integral in lessening these impacts on resources that Tribal Nations rely on for sustenance, income, recreation, and ceremonies.

A Tribe's inherent sovereignty is the recognition that Tribes historically and contemporarily have the right to self-govern their own nation, lands, and resources. This right existed well before the establishment of the federal and state governments and is still true today.

Traditional knowledge

There are many ways to express how Tribes have applied historical knowledge throughout generations. For this document, it will be called "traditional knowledge." Traditional knowledge is based on a cumulative body of knowledge and experience of Indigenous people of the environment that holds Mother Earth and all living beings as sacred. Through oral stories and physical ways of learning, this knowledge has been passed down for generations. Actions and decisions made by Tribal Nations consider the potential impacts on this generation as well as the next seven generations.

The state respects and acknowledges these principles and will continue to work with Tribal Nations on how to apply and integrate Tribal knowledge to address climate change.

Teachings and core values

All beings on earth — plants, animals, land, and even the water — are considered relatives and should be treated according to the Ojibwe Seven Grandfather Teachings and Dakota Core Values.

Seven Grandfather Teachings: These are principles that the Ojibwe should live by for a good and balanced life. Each of these teachings should be used together to create a harmonious community among all living beings.

- Zaagi'idiwin (Love)
- Debwewin (Truth)
- Manaaji'idiwin (Respect)
- Nibwaakaawin (Wisdom)
- Inendizowin Dibaadenindizowin (Humility)
- Gwayakwaadiziwin (Honesty)
- Zoongide'iwin (Bravery)

Dakota Core Values: Across generations — past, present, and future — these values serve as a guide to living harmoniously and treating all other living beings in order to be a good caretaker of the land and a good family and community member.

- Wócekiya (Prayer)
- Wóohoda (Respect)
- Wówauŋšidaŋ (Compassion)
- Wówaȟbadaȟŋ (Humility)
- Wóksape (Wisdom)
- Wóokiya (Generosity)
- Wówicaka (Honesty)

Tribal-State relationship

The 11 Tribal Nations that share geography with Minnesota are sovereign governmental entities and as such have a unique government-to-government relationship with the State of Minnesota. They are: Bois Forte Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, Leech Lake Band of Ojibwe, Lower Sioux Indian Community, Mille Lacs Band of Ojibwe, Prairie Island Indian Community, Red Lake Band of Chippewa, Shakopee Mdewakanton Sioux Community, Upper Sioux Community, and the White Earth Nation.

Climate change policies have the potential to impact communities throughout Minnesota, including Tribal Nations. State and Tribal governments plan and implement their own policies, programs, regulations, and laws related to climate change. Early and meaningful consultation on climate policies and programs, along with ongoing collaboration, establishes mutually beneficial outcomes.

Minnesota Statutes §10.65 recognizes Tribal status, the relationship with the State of Minnesota, and the need for formal consultations and meaningful collaborative and coordination efforts with all Tribal governments. Consultation is the proactive, affirmative process of identifying and seeking guidance from appropriate Tribal governments and considering their interest as a necessary and integral part of the decision-making process.

Tribal climate impacts and priorities

Throughout the Climate Action Framework update process, Tribal leaders, staff, and community members voiced many priorities relating to climate change. Tribes spent valuable time and energy working to update this document, as well as finding strategies and other ways to help Tribal communities in the face of climate change. Continued collaboration and information sharing between the state and Tribal Nations early and often regarding climate actions is important, along with continued efforts for equitable outcomes that recognize and respect Tribal sovereignty. Priorities shared by both Tribes and the state will provide beneficial outcomes to Tribal and rural communities across all sectors, including energy, air and water quality, forestry, wildlife, fisheries, and carbon sequestration. Below are some of the Tribal priorities voiced during conversations throughout the updating process.

Protection and restoration of wild relatives and their habitats

For generations, the Indigenous people of Minnesota have relied on and respected the land, its resources, and wild inhabitants. Many Tribes and their community members rely on these sources for sustenance, income, and recreation, and many culturally significant wild relatives have been found to be sensitive to the impacts of climate change. Wild rice, maple trees, birch trees, fish, deer and/or moose, foraged berries, traditional plants and herbs, are all examples of species that are culturally significant to the Indigenous people of Minnesota and are at risk due to climate change. Water quality is also an important shared priority across Tribal Nations. Water is the source of life itself and supports all living beings. Water quality impacts to Tribal waters could bring significant consequences to Tribal and surrounding communities across Minnesota.

Infrastructure

Improving existing infrastructure, including introducing renewable energy upgrades and weatherization to Tribal buildings and community homes, has become a high priority for Tribes. Upgrading current and proposed future buildings and homes may significantly reduce energy-related costs for Tribes and community members. There is also a large need across Tribal communities and rural communities for contractors to construct and repair renewable energy infrastructure and maintain existing facilities.

Continued collaborative efforts

Early consultation, coordination, and collaboration with Tribal governments is integral to ensuring Tribes are not left out in decision-making processes, potential projects, or funding opportunities that impact Tribal lands and surrounding communities. As part of this process, formal memorandums of understanding (MOU), or memorandums of agreement (MOA), should continue be established to recognize that Tribes are sovereign nations and to document the intent to have regular consultations and conversations between Tribal governments and the state on important decision-making matters at the very beginning. This can provide a better outcome for all communities as well as build an engaging

government-to-government relationship. The recognition of data sovereignty, protection, and respectful data collection processes among Tribes is important throughout consultation and collaboration, ensuring data gathered and shared provide mutually beneficial outcomes for both Tribes and the State.

Tribes have shared the need for less-stringent grant requirements as State-led opportunities arise, and that the requirements for reporting, matching funds, and eligibility consider Tribal needs and constraints. Tribes emphasized a need for increased capacity to handle the multiple projects, grants, and other opportunities that arise, which could be beneficial for their communities. Increased noncompetitive funding opportunities will provide for more planning and implementation projects on Tribal lands that can minimize the impacts of climate change. In addition to increased funding support, flexible technical assistance on grants and projects may allow for Tribal and non-Tribal entities to partner together and create a more connected, trusting, and beneficial relationship.

Goal 1
Clean transportation

Goal 1: Clean transportation

Connect and serve all people through a safe, equitable, and sustainable transportation system.

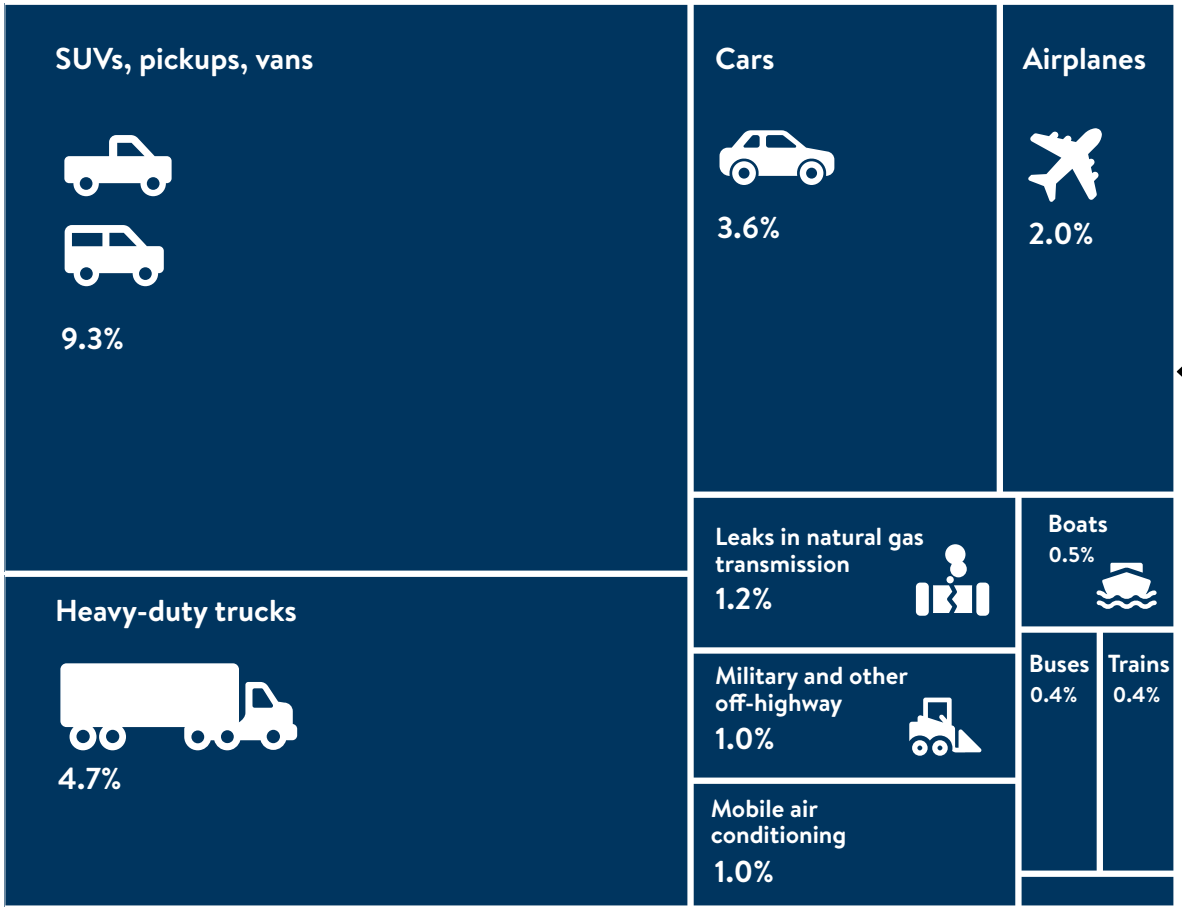
Challenges and opportunities

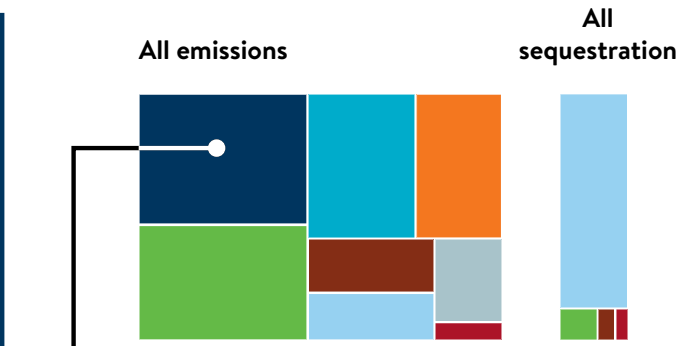
The challenge	The opportunity
Transportation is the largest source of GHG emissions in Minnesota, accounting for about 29% of the state's emissions.	Reducing trips, shifting trips to lower-carbon travel options, and transitioning to EVs and lower-carbon fuels can reduce GHG emissions.
The transportation system of today won't get us to the Minnesota of tomorrow. The way we designed and built our communities and roadways has made driving alone the easiest and most common choice, since destinations are spread out and other travel — such as walking, biking, rolling, and public transit — can be unsafe and less convenient. This system is costly, increases emissions, encourages car-centric development, and negatively affects public health.	More efficient land uses and expanding opportunities for walking, biking, rolling, and transit can help Minnesota meet the needs of the future. By designing communities where more destinations are close by and connected through safe, convenient travel options, people will have real choices beyond driving alone. This approach lowers costs, protects natural and working lands, reduces emissions, and improves the health of people and communities.
Most vehicles are powered by fossil fuels and produce air pollution that harms people's health, especially for those living near busy roads.	Shifting to EVs reduces air pollution and can help drivers save money, because they are cheaper to run and maintain. For vehicles that are harder to electrify in the near term — such as trucks, buses, and planes — using cleaner fuels can lower emissions, reduce dependence on oil, and create local clean energy jobs.

Transportation sector GHG emissions

Emissions

Percents are of total Minnesota emissions.





Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

Transportation is the largest source of GHG emissions in Minnesota, making up about 29% of the state's total emissions. Most of these emissions come from gas- and diesel-powered trucks, SUVs, and cars. Unlike the electricity sector, where emissions have gone down, transportation emissions have stayed about the same for over a decade. As more people drive longer distances and take more trips, emissions could rise unless we make major changes.

To reduce emissions, Minnesota should follow a clear order of priorities:

1. Encourage more efficient land uses and street design to make walking, biking, rolling, and transit more available and attractive to reduce the need to drive.
2. Electrify as many vehicles as possible.
3. Use cleaner fuels in harder-to-electrify vehicles and equipment, such as in medium- and heavy-duty vehicles and aviation.

This approach supports both climate goals and public health. It has the potential to reduce the damage caused by car-centric development, such as traffic deaths, air pollution, water pollution, and heat islands, which an expanding road network can exacerbate.

Resilient

Minnesota's roads, bridges, and transit systems are at risk from climate change. Heavy rain, flooding, extreme heat, and freeze-thaw cycles are already causing damage and delays. These issues especially impact rural, Tribal, and low-income communities, where alternate routes and resources are limited.

Community resiliency can be impacted by transportation infrastructure. For example, paved roads and parking contribute to the urban heat island effect, exacerbate health impacts, and contribute to flooding as stormwater runs off hard surfaces instead of soaking into the ground. Additionally, a transportation system that makes single-occupancy vehicles the only way to get around harms and excludes children, older adults, people who have disabilities, and people with lower incomes or who are experiencing poverty by limiting their access to services and social and economic opportunities. A resilient community has multiple, accessible ways to move around, especially during disruptions.

Resilience in transportation is more than withstanding natural disasters. To be resilient, our transportation network should have the ability to anticipate, prepare for, and adapt to changing conditions and withstand and recover quickly from disruptions. This can look like incorporating green infrastructure to reduce flood risk and mitigate the urban heat island effect, planning for growing populations and changing patterns (e.g., telework, home delivery), expanding active transportation infrastructure to improve safety and accessibility for all users, and more.

Equitable

Transportation professionals must acknowledge that transportation systems and agency decisions have underserved, excluded, harmed, and overburdened some communities. Past decisions denied Black and Indigenous communities, as well as people with disabilities, the full participation in transportation benefits. These and other overburdened communities have historically been disproportionately harmed by transportation decisions.

Transportation equity means the benefits and burdens of transportation systems, as well as services and spending, are fair and just, which historically has not been the case. Transportation equity requires ensuring overburdened communities, especially Black, Indigenous and people of color, share in the power of decision-making.

Transforming our transportation systems, services and decision-making processes will require ongoing listening, learning, changing, implementing and adapting.

Everyone building and maintaining the transportation system has a role to advance transportation equity. Agencies must partner with community members, community-based organizations, labor groups, transportation service providers, Tribal Nations, and government institutions to evolve the work and to change outcomes for Minnesota communities.

Actions: Clean transportation

Connect and serve all people through a safe, equitable, and sustainable transportation system.

Initiative 1.1: Travel options

Maintain and improve multimodal transportation connections to improve mobility and reduce emissions.

1.1.1 Increase active travel by making transportation network improvements that make walking, rolling, biking and taking transit safe, attractive, and accessible for all.*

1.1.2 Shorten trip distances and improve access to key destinations, including workplaces, business districts, schools, neighborhoods, and recreation areas, by requiring and incentivizing land use policies that encourage compact and multimodal-oriented development.

1.1.3 Increase high occupancy travel by expanding transit service and shared mobility options, such as carshare, shuttles, carpools, and vanpools.*

1.1.4 Make it easier for people to choose options other than driving alone through education, communications, and incentives.

Initiative 1.2: Clean and efficient vehicles

Accelerate the transition to EVs or zero-emission vehicles and advanced clean fuels.

1.2.1 Reduce the life cycle carbon intensity of transportation fuels.

1.2.2 Expand zero-emission vehicle charging infrastructure.*

1.2.3 Accelerate the adoption of light-duty EVs.

1.2.4 Transition to medium- and heavy-duty zero-emission trucks.

1.2.5 Transition to zero-emission off-road vehicles, engines, and equipment.

Initiative 1.3: Resilient and low-carbon infrastructure and system management

Maximize resiliency and emissions mitigation in infrastructure and operations.

1.3.1 Optimize transportation system management and operations to reduce peak demand, enhance safety, and improve reliability.*

1.3.2 Design the transportation system to be resilient to climate hazards.

1.3.3 Utilize low-carbon materials and methods for constructing and maintaining transportation infrastructure.

1.3.4 Utilize the transportation system right-of-way for alternative beneficial uses to support sustainability, public health, quality of life, and economic development.

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Clean transportation

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Carbon neutrality	Reduce GHG emissions from the transportation sector 100% by 2050.	Minnesota reduces net GHG emissions from the transportation sector.
Pillar: Resiliency	Reduce percentage of culverts in poor or severe condition to no more than 10% of culverts by 2035.	Minnesota's transportation system is resilient to climate change.
Pillar: Equity	Ensure transportation and housing costs account for less than 45% of household income for all Minnesotans.	Transportation costs are affordable for all households, including low-income households.
Initiative 1.1: Travel options	Decrease vehicle miles traveled per capita 8% by 2030, 11% by 2035, 14% by 2040, and 20% by 2050.	Minnesotans are less dependent on driving to access services and opportunities.
	Eliminate traffic deaths and serious injuries among nonmotorized road users.	Nonmotorized transportation, including walking and biking, is safe.
Initiative 1.2: Clean and efficient vehicles	Increase the proportion of zero-emission vehicles among all light-duty vehicles registered in Minnesota to 20% by 2030 and 65% by 2040.	Zero-emission vehicle adoption is increased across Minnesota.
	Achieve statewide coverage of publicly accessible EV charging, with DC fast-charging stations installed along interstates and principal arterials every 50 miles in urban areas and every 75 miles in rural areas by 2035, and at least one Level 2 charger installed in every Minnesota ZIP code by 2035.	The EV charging station network is expanded to ensure coverage across Minnesota.
Initiative 1.3: Resilient and low-carbon infrastructure and system management	Reduce percentage of culverts in poor or severe condition to no more than 10% of culverts by 2035.	Minnesota's transportation system is resilient to climate change.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Many Tribal Nations that share geography with the state of Minnesota are in rural areas and communities, where accessible and reliable methods of transportation may be limited. Additionally, many Tribal communities have few or even no paths for people to walk, bike, or roll, which increases the risk of people being injured or killed in crashes. Tribal communities, like many communities across the state, are also susceptible to the health impacts of vehicle emissions. These emissions degrade air and water quality and impact humans as well as culturally significant species.

The following are key priorities identified through Tribal-State coordination:

- Early consultation and collaboration between Tribal and state governments are essential for transportation projects, especially road construction that may result in culturally significant findings and resources, such as burial grounds, traditional relics, and areas where culturally significant plants grow.
- Increase the availability of reliable transportation across rural areas, including those throughout Tribal communities.
- Increase access to walking and biking paths throughout Tribal communities to decrease crashes that injure or kill people.

Tribal-State collaboration

Transportation resilience funding

MnDOT received approximately $115 million in federal PROTECT formula funding to promote resilience for surface transportation around the state. Eligible applicants include states, metropolitan planning organizations, local governments, transportation authorities or districts, Tribal governments, and federal land agencies applying with states. Eligible projects align with Tribal priorities, including addressing extreme precipitation and flooding, extreme temperatures, freeze-thaw changes, abnormal winter weather, wildfires, landslides, and/or coastal erosion, such as along Lake Superior's north shore.

We all have a role

Transportation touches all Minnesotans and all parts of our economy. We all have a role to play in achieving a lower-carbon transportation system.

- Federal, state, Tribal, and local governments must work together to plan, fund, and build a safe, equitable, and sustainable transportation system.
- Local governments can design roadways to support biking, walking, rolling, and public transit; facilitate more efficient land use patterns to enable multimodal travel; efficiently manage and regulate parking; and provide public EV charging at public facilities and along roadways.
- Governments, businesses, and nonprofits must invest in expanding infrastructure needed to support active transportation, lower-carbon fuels, and EVs.
- Organizations can use education and incentives to encourage employees and visitors to choose cleaner transportation options.
- Individuals can walk, roll, bike, take transit, telecommute, consolidate short trips, rideshare, and prioritize electric options. Individuals can also call on government bodies to implement infrastructure improvements.

Complete Streets better connect our communities

Cass Lake is the headquarters of the Minnesota Chippewa Tribe and Leech Lake Band of Ojibwe.

Highway 371 runs north-south through the city. Highway 2 separates a residential area on the south side of the road from businesses, Tribal resources, and the Tribal government center on the north side. Before a recent redesign, this stretch of Highway 371 had old pavement and no sidewalk, so community members had to walk and bike along the road to get to destinations on the other side of town.

Many towns across Minnesota face similar infrastructure challenges. Cities designed for car traffic frequently make commuting by foot, bike, or other modes of transportation difficult. To meet Minnesota's climate goals, we must rethink how we get from point A to B in a way that supports commuters of all ages and abilities.

That's why MnDOT has implemented Complete Streets, a flexible approach to designing and operating roads to address the safety concerns and accessibility needs. Complete Streets consider the needs of pedestrians, bicyclists, transit users, motorists, commercial vehicles, and emergency vehicles. Benefits include improved safety, community connectedness, and increased access to active transportation options.

In Cass Lake, MnDOT partnered with the Leech Lake Tribe and the city on engagement to understand how the Highway 371/2 intersection could be redesigned for better mobility. "We heard lots of concerns from the community," said MnDOT project manager Jon Mason. "We identified corridor concepts and alternative designs of the highway so that different modes of traffic and people that travel through and within Cass Lake can get around safely."

With the principles of Complete Streets in mind, a sidewalk and a shared-use path were added to each side of Highway 371. Now Cass Lake residents and visitors can walk or bike to destinations north of Highway 2, including employment centers like the hotel and casino, and services such as the Indian Health Service clinic and Tribal government buildings.

By taking a holistic approach to transportation planning, we can improve safety, better connect our communities, and reduce pollution from the transportation sector.

Goal 2
Climate-smart natural and working lands

Goal 2: Climate-smart natural and working lands

Manage landscapes to absorb and store more carbon, reduce emissions, and sustain healthy and resilient lands and waters.

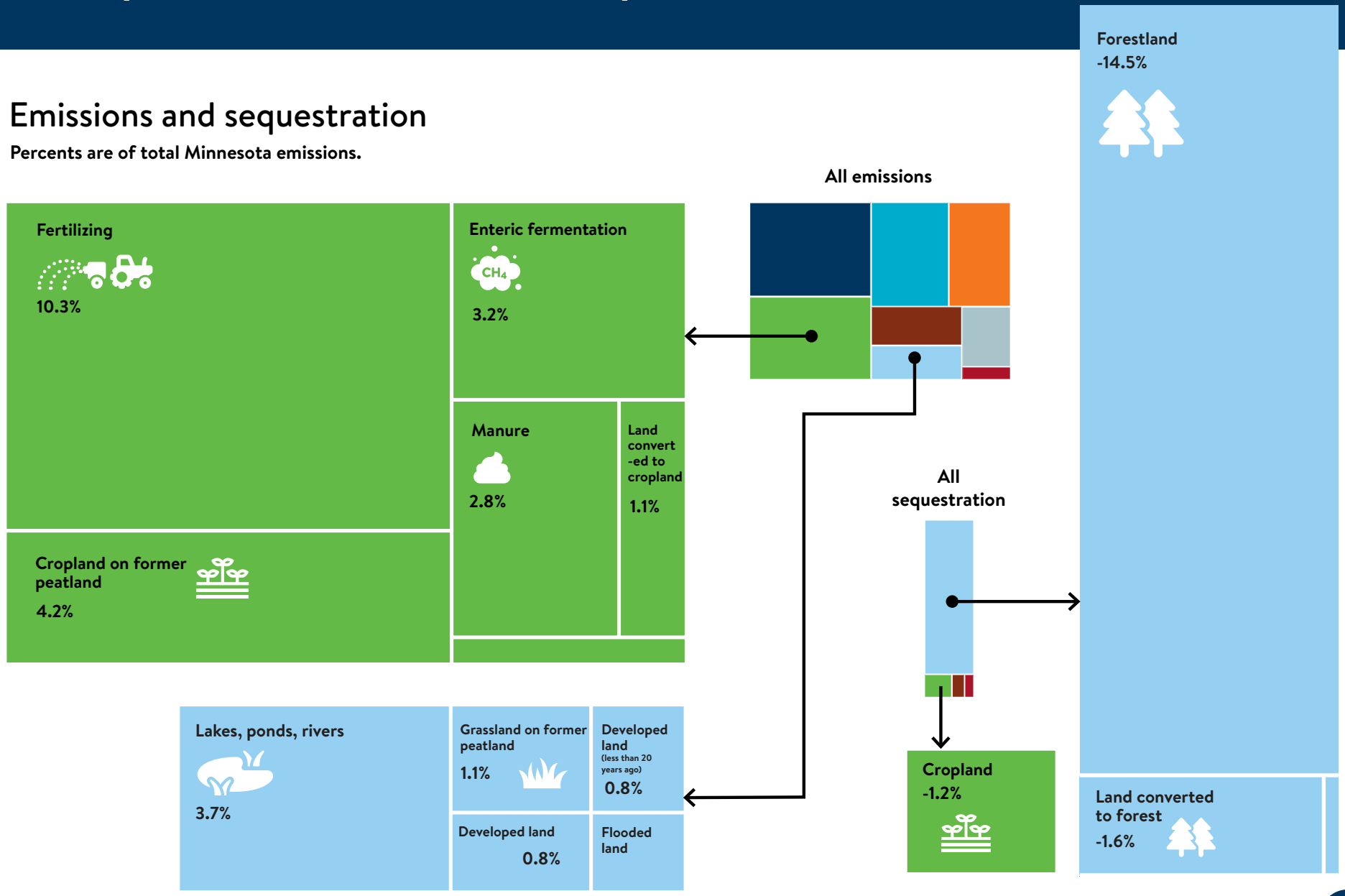
Challenges and opportunities

The challenge	The opportunity
Minnesota's second-largest source of GHG emissions is the agriculture sector, accounting for about 25% of the state's net emissions.	Using soil health practices such as cover crops and reduced tillage, combined with efficient use of nitrogen fertilizers, manure management and feed additives, we can significantly reduce or mitigate emissions while protecting aquatic habitats and water for consumption and recreation.
Every year thousands of acres of forest and grassland are converted to more intensive land uses, such as agriculture and development, which reduces carbon storage and emits carbon dioxide to the atmosphere. On average, an acre of grassland in Minnesota holds 41 metric tons of carbon, while an acre of forest in Minnesota holds 80 metric tons. Converting these lands also negates their ability to continue to sequester carbon into the future.	By protecting native landscapes and working lands; maintaining, expanding, and actively managing forestlands; and accelerating grassland and wetland restoration and management; we can reduce emissions and harness the power of these landscapes to continue to sequester carbon. These actions also enhance resiliency by increasing the ability of natural systems to adapt to the changing climate, storing more water and providing refuge and shade.
Peatlands drained for agriculture, transportation, and development during the early 20th century are large sources of GHG emissions within the agriculture and land use sectors.	Rewetting peatlands reduces carbon emissions and gradually returns them to carbon sinks, transforming the carbon cycle while protecting human health, ecosystems, water quality, and food sources.
Increasing temperatures and more extreme drought and flooding events present formidable challenges to natural and working lands.	The resilience of our natural and working lands can be strengthened through conservation, restoration, and management for multiple benefits.

Agriculture sector and land use, land-use change, and forestry sector GHG emissions and sequestration

Emissions and sequestration

Percents are of total Minnesota emissions.



Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

Minnesota's varied landscapes — croplands, pastures, forests, grasslands, wetlands, peatlands, and our more than 10,000 lakes — are part of our identity. They are also an essential part of our climate solution.

Minnesota's agricultural sector represents a significant portion of Minnesota's economy and GHG emissions. Fortunately, we have known practices and technologies to reduce emissions from fertilizer, livestock, food systems, and energy use, while storing carbon in healthy soils.

The land use, land-use change, and forestry sector sequesters more GHGs than it emits, offsetting about 10% of the state's net emissions. Annual sequestration has grown since 2005 due to increased sequestration in forests but is expected to decline as our forests age and climate change alters our extensive peatlands.

Restoring peatlands, wetlands, and grasslands and improving water quality will reduce GHG emissions from lands and waters over the long run. Stewardship of natural and working lands can also help absorb and store more heat-trapping GHGs. For example, Minnesota's forests and woodlands absorb the equivalent of emissions from over five million gas-powered vehicles each year and offset around 16% of Minnesota's annual GHG emissions. Continued active management is needed to maintain and increase these offsets.

Resilient

Warming temperatures and more volatile precipitation patterns pose direct threats to Minnesota's natural and working lands. These changes are expected to increase the frequency and severity of droughts, floods, and wildfire — in addition to exacerbating pest and disease outbreaks.

Proactive management can help reduce the negative consequences of climate change to natural and working lands. Adapting our natural and human systems to change today helps to maintain the flow of social, ecological, and economic benefits from natural and working lands over the long run.

Equitable

The expense of changing land management practices and adopting new technologies can be prohibitive. We can identify innovations that benefit the climate and avoid undue financial risks for landowners. Technical and financial assistance for private landowners can further support and encourage land stewardship that benefits Minnesotans as a whole, including those in economically disadvantaged communities. We can identify solutions for all types of landscapes based on site conditions, climate vulnerability, economics, and government policies and practices.

Actions: Climate-smart natural and working lands

Manage landscapes to absorb and store more carbon, reduce emissions, and sustain healthy and resilient lands and waters.

Initiative 2.1: Carbon sequestration and storage in forested lands, grasslands, and wetlands

Manage forests, grasslands, and wetlands for increased carbon sequestration and storage.

2.1.1 Maintain, expand, and actively manage forestlands.*

2.1.2 Protect, restore, and manage peatlands and other wetlands.*

2.1.3 Protect, restore, and manage grasslands.*

2.1.4 Encourage individual and collective actions that generate climate mitigation benefits.*

Initiative 2.2: Resilient landscapes and ecosystems

Enhance the ability of plants and wildlife to adapt to the effects of climate change.

2.2.1 Conserve and enhance biodiversity.

2.2.2 Use land management practices that enhance climate resilience.

Initiative 2.3: Healthy farmland

Accelerate soil health and nitrogen and manure management practices that reduce emissions and enhance carbon storage, water quality, and habitat.

2.3.1 Increase soil organic carbon content and reduce erosion.

2.3.2 Manage fertilizer and manure to reduce emissions.

2.3.3 Manage farmland for multiple benefits.*

Initiative 2.4: Sustainable landscapes and water management

Improve climate resiliency through multi-purpose water storage and management practices.

2.4.1 Manage agricultural landscapes to minimize nitrogen runoff and pollution.*

2.4.2 Manage natural and working lands to hold water and reduce runoff.

Initiative 2.5: Enhanced investments in emerging crops, products, and local economies

Invest in and support research in emerging agricultural and forest products, reduce waste and expand economic opportunities.

2.5.1 Increase sustainable agricultural production systems and develop markets for climate-benefitting products.

2.5.2 Promote the use of wood products and residual forest products to store carbon and reduce GHG emissions.

2.5.3 Support local food markets, urban agriculture, and emerging farmers.

2.5.4 Reduce waste and promote beneficial use of food and organic materials.*

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.
*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Climate-smart natural and working lands

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Carbon neutrality	Reduce GHG emissions from the agriculture sector 40% by 2050.	Minnesota reduces annual net GHG emissions from the agriculture sector.
	Maintain levels of GHG sequestration within the land use, land-use change, and forestry sector through 2050.	Minnesota maintains or increases annual net GHG sequestration in the land use, land-use change, and forestry sector.
Pillar: Resiliency	Maintain or increase abundance of key bird species in grassland, wetland, and forest habitats.	Forests, wetlands, and grasslands are healthy ecosystems resilient to climate change.
	Increase the share of cropland acres in Minnesota managed with conservation tillage, no-till, cover crops, and/or perennial crops to 60% by 2030 and 80% by 2050.	Producers implement actions to increase soil carbon and reduce erosion.
Pillar: Equity	Increase the share of farms operated by historically underserved farmers.	All Minnesotans share in the benefits provided by natural lands and a diverse and sustainable agricultural economy.
	Maintain or improve water quality in each major river basin, meeting the goals of the 2025 Nutrient Reduction Strategy.	

Progress on natural and working lands initiatives will be evaluated annually by a panel of partners and stakeholders, drawing from the latest available data/information as well as collective professional experience and judgment, as described in the ***targets supplementary document***.

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Tribes are the original caretakers of the waters, land, and living beings. It's integral to their lives and cultures that these are protected and preserved for the current generation and future generations to enjoy. Tribal-State coordination and collaboration is important in ensuring appropriate steps for climate action are taken. The State, municipalities, local governments, and communities should be mindful of the scale and pace of growth, both physically and economically. While growth is intended to bring benefits, it should be managed with awareness of the environmental costs to the surrounding ecosystems and habitats.

The following are key priorities identified through Tribal-State coordination:

- Tribal-State coordination and collaboration on water-related projects and issues and on efforts to improve, protect, and increase resiliency of Tribal waters are important to ensuring culturally important species are sustained for future generations. Peatland restoration work is needed across reservation lands and ceded territory areas; however, assistance is needed due to the vast size.
- Protecting, preserving, conserving, and improving current lands and forests for carbon sequestration, improved air quality, and culturally significant animals and plants will require Tribal-State coordination and collaboration.
- Tribal-State coordination and collaboration on policies and legislation in support of Tribal initiatives around climate-smart projects.

Tribal-State collaboration
Peatland restoration funding

The Minnesota Department of Natural Resources and the Board of Water and Soil Resources are engaged in projects to protect and restore more than 10,000 acres of peatlands in Minnesota. This includes $4 million in non-competitive funding available to Tribal Nations for peatland-related initiatives.

We all have a role

How we manage our agricultural lands, forests, wetlands, peatlands, and grasslands — and even our parks and yards — affects our climate and our quality of life. We all have a role to play in managing, protecting, and restoring our natural and working lands.

- Businesses, educational institutions, and governments can fund research to find and develop practices that promote climate adaptation and mitigation, educate landowners on their use and benefits, and support workforce training and development in these areas.
- Local governments can facilitate compact land use patterns that preserve natural and working lands and can partner with businesses, other units of governments, and community-based organizations on land preservation and restoration efforts.
- Governments and organizations can conserve and manage key natural lands and implement best practices, such as green infrastructure on developed lands.
- Individuals can reduce methane emissions and make our food systems more efficient by reducing household food waste. Through dietary choices, individuals can emphasize foods such as legumes, vegetables, and grains in their meals. Eating in-season, locally grown food is a fresh and delicious way to reduce transportation-related emissions and support local farmers.
- Individuals can also plant and tend trees and native plants, while harvesting rainwater and replacing gas-powered equipment with electric options.

Farming with the future in mind

When Mike Young floated the idea of adopting a no-till approach to growing soybeans on his farm, some of his neighbors had doubts.

“I was told the best thing I could do was sell my land to someone who really knows how to farm,” Young jokingly recalled in front of his farm outside of Waverly. Despite the doubts, he moved forward with this method, recognizing the positive impact on soil health that comes from keeping the soil intact. His persistence paid off. Twenty years later, his farm is thriving with rolling hills of healthy beans grown in fertile soil full of earthworms and microbes that support robust crops.

Mike is one of a growing number of Minnesota farmers embracing climate-smart agricultural practices that use less fertilizer and minimize soil disturbance. Agriculture is the state’s second largest source of climate pollution. No-till farming reduces the amount of pollution released when soil is disrupted. Over time, climate pollution is also absorbed and stored in this soil, reducing our overall emissions.

The State of Minnesota is helping farmers adopt these practices with funding and support from initiatives like the Minnesota Agricultural Water Quality Certification Program. This is a voluntary initiative that allows farmers to earn certification through practices like enhanced-efficiency fertilizer, crop diversification, and no-till land management.

Since 2014, more than 1.2 million acres of Minnesota farmland have been certified with over 1,690 producers enrolled. Conservation practices implemented through the program cut climate pollution from Minnesota farms by more than 58,000 metric tons of carbon dioxide per year — the equivalent of taking about 13,750 cars off our roads.

As Young noted, the benefits of this work extend far beyond reducing pollution. These farming practices reduce erosion and improve soil health, resulting in higher crop yields. They also reduce fuel and labor costs — a win-win for Minnesota farmers and our climate.

Goal 3
Resilient communities

Goal 3: Resilient communities

Ensure all communities are prepared for, can respond to, and can recover from present and future climate impacts, including extreme weather.

Challenges and opportunities

The challenge	The opportunity
Community infrastructure faces challenges from the extreme weather Minnesota is now experiencing due to climate change. This includes overwhelmed stormwater infrastructure, resulting in localized flooding and unintended wastewater releases.	By preparing roads, buildings, utilities, and green infrastructure for climate change, Minnesota communities are more resilient during extreme weather events. Infrastructure is better protected from costly damage, essential services can continue, and injuries and deaths are reduced.
Significant climate-related impacts to our natural resources within or near Minnesota communities include shoreline erosion, loss of tree canopy, degraded tree health, water shortages, wildfires, and biodiversity loss.	Community-informed planning, responsible management of our natural resources, youth engagement, and nature-based solutions increase the ability for a community's natural systems, such as community forests and shorelines, to remain a vital part of its cultural heritage and future.
Minnesotans, especially frontline and overburdened communities, are already being impacted by climate change. To prevent and mitigate a wide range of climate change impacts, communities need planning, coordination, investments, and substantial engagement to support climate-adaptive solutions.	Adaptation is a smart investment. Every dollar invested in adaptation can provide $8 to $10 in benefits, including disaster preparedness, healthy ecosystems, more reliable energy, stronger social ties, and reduced inequities.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

Many adaptation strategies have an added benefit of reducing GHGs and increasing carbon sequestration. Adding trees and other deep-rooted vegetation can sequester carbon, improve soil health, and limit the impact of extreme heat, resulting in less air conditioning needed in summer months. Resilient projects can include energy storage and solar, wind, hydro, and geothermal energy, all of which can increase energy security. Wastewater, water, and other infrastructure improvements to build resilience can incorporate energy efficiency upgrades.

Resilient

Investing in climate resilience helps communities transition and adapt to extreme weather while helping Minnesotans stay physically, mentally, socially, and economically healthy.

Many communities have aging and inadequate infrastructure that can't handle extreme precipitation. The result is flooded roadways, sewage backing up into homes and businesses, wastewater treatment system overflows into waterways, and millions of dollars in damages to public and private property. Strategies for increasing stormwater storage capacity are essential and can incorporate green infrastructure solutions.

Investing in resilience means communities are made up of homes and buildings that withstand flooding and other extreme weather impacts, reduce the amount of waste generated from rebuilding, mitigate mold and mildew growth, and increase health and safety.

Equitable

Overburdened communities, including people with lower incomes or who are experiencing poverty, are historically excluded from or have limited access to adaptation strategies. As a result, overburdened communities are more impacted by flooding, extreme heat, and other climate change events.

When communities are negatively impacted by extreme weather, not only are traditional ways of life disrupted, but the costs of insurance, construction, electricity, food, and other necessities rise, which in turn exacerbates barriers to adaptation strategies.

Equitable investment in adaptation must address this cycle of burden by sustaining local assets and services fundamental to a community's prosperity.

Actions: Resilient communities

Ensure all Minnesota communities are prepared for, can respond to, and can recover from present and future climate impacts, including extreme weather.

Initiative 3.1: Climate-smart communities

Build Minnesota communities' capacity to protect against and withstand the effects of climate change.

3.1.1 Support communities in the development of climate resilience plans.

3.1.2 Fund planning and implementation for resilience and adaptation actions through multiple sources.

3.1.3 Integrate climate resilience into local, regional, and state planning.

Initiative 3.2: Healthy community green spaces and water resources

Expand and protect tree canopies, parks and other green spaces, and lakes, rivers, and wetlands that provide multiple community resilience benefits.

3.2.1 Advance community forestry.

3.2.2 Plant vegetation on public and private green spaces that benefits climate resiliency and adaptation.

3.2.3 Protect and improve water quality and manage water quantity to support community resilience.*

Initiative 3.3: Resilient infrastructure

Increase climate resilience in the built environment.

3.3.1 Assess climate vulnerabilities of public facilities and infrastructure, giving priority to essential and critical assets, especially in overburdened communities.*

3.3.2 Modify programs, technical assistance, and regulations to address climate impacts and encourage adaptation.

3.3.3 Increase the resilience of existing infrastructure and redevelopment.

3.3.4 Expand stormwater system capacity and green infrastructure to prevent flooding.

3.3.5 Mitigate extreme heat and implement actions that help communities adapt.

3.3.6 Advance sustainable land use and new development that incorporates resilience.

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Resilient communities

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Resiliency	By 2031, 100% of Minnesota communities have incorporated resilience into their planning.	All Minnesotans live in communities with plans that identify actions to build resilience to extreme weather events or adapt to climate impacts.
	Increase the share of Minnesota communities that have taken action to adapt or increase resilience to 50% by 2031 and 100% by 2050.	All Minnesota communities take action to adapt or increase resilience.
Pillar: Equity	By 2035, 100% of Minnesotans know where to find and have access to a resilience hub or cooling center within a reasonable distance or travel time from home.	Minnesota communities have expanded community services that support climate resilience.
Initiative 3.1: Climate-smart communities	Increase the share of Minnesota communities that have access to financial resources for implementing resilience actions to 50% by 2031 and 100% by 2050.	All Minnesota communities have access to financial resources for implementing resilience actions.
	By 2030, 225 communities participate in the GreenStep or Gold Leaf Challenge programs.	All Minnesota communities have access to technical assistance and resources to support identification of climate risks and actions to plan for and implement resilience actions.
Initiative 3.2: Healthy community green spaces and water resources	Achieve 30% tree canopy coverage by 2030 and 40% by 2050 in all Minnesota communities.	All Minnesotans live in communities with sufficient and equitable tree canopy coverage to support climate resilience.
	Achieve natural shorelines along 75% of Minnesota's lakeshores by 2040.	Minnesota lakeshores are resilient to climate impacts and promote water quality.
Initiative 3.3: Resilient infrastructure	By 2035, 100% of Minnesota communities use future climate conditions for infrastructure project design.	Infrastructure in Minnesota communities is resistant to climate hazards.
	By 2035, 50% of Minnesota communities have adopted climate hazard resistant building policies.	Buildings in Minnesota communities are resilient to climate hazards.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Tribal communities interweave culture and their surroundings, creating a holistic, sustainable way of living. With many Tribes integrating ancestral ways of living into modern governance and community life, there is a great need for additional capacity and assistance to support their programs and goals. With the changing climate bringing more frequent extreme weather events, Tribes need to become more resilient by improving infrastructure and weatherization techniques as well as the implementation of emergency and hazard mitigation plans.

The following are key priorities identified through Tribal-State coordination:

- Updating Tribal community members' homes and Tribal building infrastructure with weatherization, climate resilience technologies, and energy solutions can help better prepare community members for extreme weather events as well as lower energy costs.
- Integration of climate-resiliency priorities pertinent to Tribes into emergency and hazard mitigation plans would help Tribes become better equipped to handle climate-related issues that may trigger a community-wide emergency or hazard.
- Additional Tribal-State collaboration that improves capacity and technical assistance can help support Tribes' goals for holistic community living; connections between health and culture; traditional, positive mental health; and integration of traditional knowledge passed down in the communities for generations.

Tribal-State collaboration

Tribal professional and technical assistance funding

MPCA co-developed a Tribal Climate and Environmental Professional and Technical Assistance Grant with Tribal Nations. This program provides funding for contractors to work directly with Tribal governments and Tribal organizations that serve Tribal governments in Minnesota to provide technical support and assistance to advance Tribal-driven environmental and climate action. Services include grant writing, grant management, identification of priority areas for funding, environmental science, engineering assistance, or engagement and educational assistance.

We all have a role

Building resilience will require localized planning, action, and expertise from federal, state, Tribal, and local governments; researchers; businesses; labor organizations; and community members.

- Individuals can make improvements to their property, educate themselves on climate resilience strategies, and hold local and state government accountable for providing the policies, tools, and funding needed to support community resilience.
- Governments and organizations can lead in preparing for climate change through resilience planning and implementation across agencies and organizations at all levels.
- Local governments can train and prepare emergency management services for severe weather events, develop and enforce land-use controls to minimize development in high fire or flood risk areas, and zone and manage publicly owned lands to support healthy tree canopy, vegetation, and stormwater management goals.
- Schools and local organizations can help educate and engage the next generation of environmental stewards.
- To prepare for extreme weather and climate impacts, property owners can implement resilience strategies for their land and buildings that align with local planning efforts.
- Educational institutions, governments, and organizations can provide training and technical expertise to help communities, businesses, and individuals understand their vulnerabilities to climate change and implement strategies to build resilience.
- Federal, state, Tribal, and local governments can collaborate to develop, share, and use the data necessary for analyzing and planning for climate impacts.

Cody Fox, district administrator for the Cedar River Watershed District, at a berm in Mower County.

Planning for a rainy day prepares Minnesota communities

Lafayette Park in Austin, Minnesota, looks like an unlikely place for severe flooding. The park sits along the Cedar River, flat enough for ballfields and a horseshoe pitch. But during a historic storm in 2004, floodwaters covered the park with nearly eight feet of water, a reminder that every community is vulnerable to the impacts of climate change.

As rainstorms become more intense in Minnesota, many communities are finding that stormwater systems built decades ago aren't designed to handle today's conditions. For Austin residents, the risk is real and has shaped their community. "We've got parks now where there used to be neighborhoods," said David Simonson, a retired Austin police officer who responded to the 2004 floods. "Our whole neighborhood down here, everybody's out. People learn it's time to go."

To better protect Austin, solutions are being built miles upstream. With support from a resilience planning grant from the MPCA, the Cedar River Watershed District studied how stormwater moves through surrounding farmland and into the city. The results of that study are being used to inform the design of a series of stormwater berms that temporarily hold back water and release it slowly, reducing the risk of flooding downstream.

Over the last three years, the MPCA has distributed over $95 million to more than 160 communities in every corner of Minnesota to identify similar solutions to climate impacts, including more rain, hotter temperatures, and more severe storms.

Each community must respond to climate change in the way that works best for residents. Austin and the Cedar River Watershed District exemplify the locally tailored efforts needed to address flooding, plan for extreme weather, protect infrastructure, and build safer, more climate-ready communities across Minnesota.

Goal 4
Clean energy

Goal 4: Clean energy

Implement Minnesota's 100% carbon-free electricity by 2040 law and set a course for long-term, sustainable use of clean energy in the state.

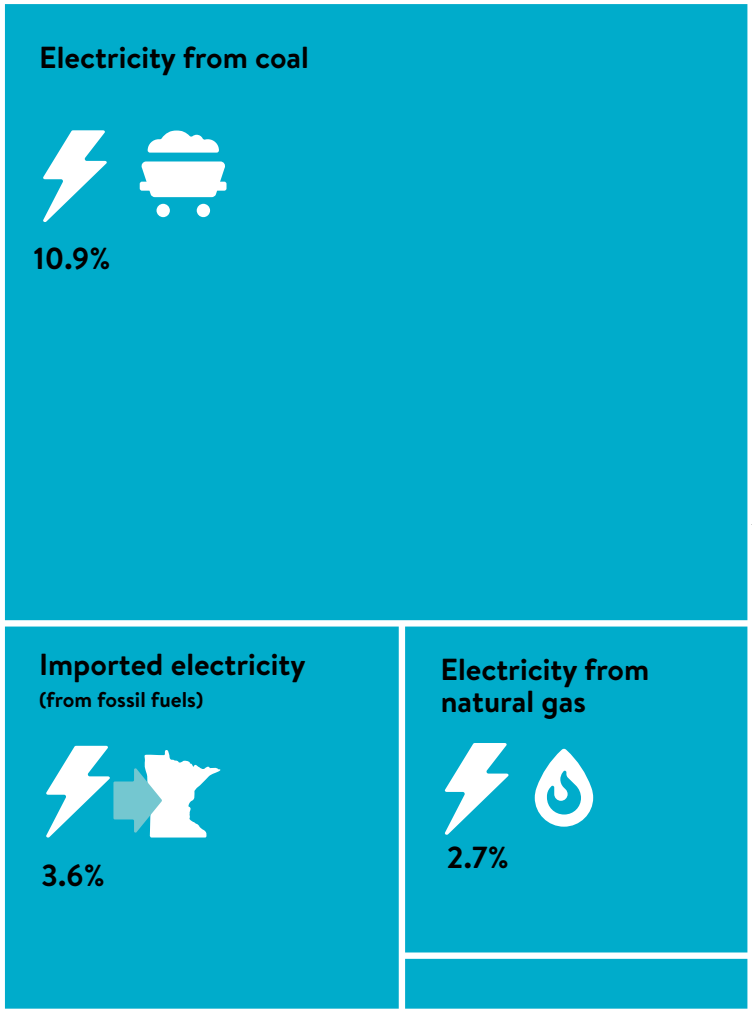
Challenges and opportunities

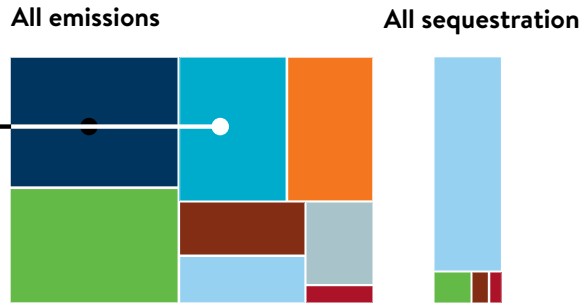
The challenge	The opportunity
Despite making significant gains on GHG emissions reduction in the energy sector, Minnesota still has progress to make. Continued movement away from fossil fuels, particularly coal, is necessary to reduce air pollution and increase public health.	Minnesota passed a law in 2023 to power our state with 100% carbon-free electricity by 2040, which will reduce pollution and offer the possibility for further emission reductions via electrification in other sectors, such as transportation and buildings.
Demand for electricity is rising. While wind and solar are usually the lowest-cost sources, they don't produce electricity all the time. Because electricity must be supplied the moment it is used, fluctuating renewable output could potentially lead to gaps in supply and periods of excess generation. Minnesota's grid must ensure a clean energy supply that continually meets demand.	Minnesota has excellent potential to expand carbon-free electricity, including wind and solar, toward meeting higher demand, and recently passed a law to speed energy project permitting. Many strategies — including battery storage, demand response, virtual power plants, and clean firm (non-intermittent) sources such as hydropower and nuclear — can provide grid flexibility and balance supply with demand, even when a very high percentage of power comes from wind and solar.
With anticipated increases in energy demand, volatile natural-gas markets, and rising threats of weather and fire damage to our energy system due to climate change, it is more important than ever to switch to clean energy. Building a carbon-free electrical grid will require significant upfront investments in new renewable energy and transmission infrastructure that will result in a more price-stable energy system. Increases in energy costs are challenging for everyone and disproportionately impact low-income households, rural residents, and communities of color, who often spend a higher share of their income on energy bills.	The 100% carbon-free electricity by 2040 law enables careful planning and transitioning to cleaner energy over time. Minnesota's electric costs are below the national average, providing a competitive economic advantage, but the state's aging electrical grid requires investment. Renewables, with no fuel costs, provide a way to help keep electric prices lower and stable while we upgrade our electric infrastructure.

Energy sector GHG emissions

Emissions

Percents are of total Minnesota emissions.





Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

The electricity generation sector accounts for 20% of Minnesota's net GHG emissions, mostly from the use of coal and natural gas. This includes emissions from electricity generated both in state and out of state for Minnesotans. From 2005 to 2022, Minnesota cut GHG emissions in half by transitioning away from coal toward natural gas and renewable energy. With the passage of the Clean Electricity Standard in 2023, the state will continue the downward emissions trend toward achieving net-zero, or 100% carbon-free, electricity by 2040.

Wind and solar, with their lack of fuel costs, usually provide the least expensive way to add new electric generation, even without federal subsidies. Long-distance transmission, batteries, and other clean firm technologies, such as hydropower and nuclear energy, offer the support needed to run an electric grid at very high levels of wind and solar.

Minnesota's transition to clean electricity is the backbone of achieving the state's goal of a carbon-neutral economy by 2050. Our commitment to clean electricity is an asset, increasing the attractiveness of the state to businesses of all types, including some data center companies and other energy-intensive development. The expected growth in facilities that use a large amount of electricity represents both a challenge and an opportunity, with facilities that can bring flexible electric use providing the most potential benefit. New electric users that increase the utilization of existing sources of clean electricity without spiking peak electricity demand, as well as companies that invest in additional clean energy resources or electric grid updates, have the highest potential to reduce electric rates.

As more homes, vehicles, and businesses are run on carbon-free electricity instead of fossil fuels, we can sharply reduce GHG emissions while improving air quality and public health. Significant reductions in climate pollution from Minnesota's electricity generation sector over the last two decades show what is possible through smart policy, strong collaboration, and commitment to achieving collective goals as a state.

Resilient

Transitioning to homegrown, carbon-free electricity will make Minnesota more resilient by reducing reliance on imported fossil fuels that are vulnerable to volatile global markets and price spikes.

Modernizing Minnesota's grid with clean energy technology improves reliability, allowing communities to better withstand extreme weather and climate impacts. Distributed energy systems, such as rooftop solar and battery storage, provide backup power during outages and emergencies.

A carbon-free electricity system equips Minnesota with the tools to adapt to a changing climate while protecting households and businesses from future disruptions. These systems can also work together to reduce strain on the grid and shave peak energy demand, saving money and reducing reliance on gas peaker plants (power plants that operate during times of high energy demand).

Equitable

Power generation, transmission, and distribution affect everyone, but not all Minnesotans are able to access the benefits of clean energy, because of old, polluting infrastructure or lack of investment in communities. Loss of electrical power unfairly impacts those who do not have access to backup power, deepening inequities for those who face the greatest health and safety risks during outages such as low-income households, individuals who are vulnerable due to health status, and people without homes.

An equitable clean energy transition expands opportunities for households and businesses in overburdened communities to access and benefit from affordable clean energy. An equitable clean energy transition also means supporting communities as they lead on owning and developing energy projects within their own neighborhoods.

Actions: Clean energy

Implement Minnesota's 100% carbon-free electricity by 2040 law and set a course for long-term, sustainable use of clean energy in the state.

Initiative 4.1: Enhanced grid and resilient grid infrastructure

Promote electrical grid and transmission upgrades to enable greater reliability and renewable energy access.

4.1.1 Upgrade transmission and distribution infrastructure and deploy advanced technologies.*

4.1.2 Advance innovative utility-scale storage technologies.*

4.1.3 Advance distributed generation and storage.*

Initiative 4.2: Clean energy sources

Accelerate deployment of carbon-free energy.

4.2.1 Transition to 100% carbon-free electricity and strengthen community and Tribal engagement efforts.*

4.2.2 Accelerate the growth of both large-scale and distributed clean energy generation.

4.2.3 Strategically repurpose energy generation facilities and associated grid interconnections.

Initiative 4.3: Dispatchable clean energy and storage

Deploy clean dispatchable generation and long-duration storage technologies that balance supply and demand.

4.3.1 Support demonstration and pilot-scale deployment of new, innovative, dispatchable clean generation and long-duration storage.*

4.3.2 Support full deployment of proven long-duration storage and dispatchable clean generation.

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Clean energy

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Carbon neutrality	By 2040, all of Minnesota's electricity is carbon-free.	Minnesota achieves its 100% carbon-free electricity standard by 2040.
Pillar: Resiliency	All regulated utilities exceed their reliability goals, which are set by the Minnesota Public Utilities Commission (PUC), each year between now and 2030.	Minnesota's electrical grid and fuel distribution system are reliable and stable.
Pillar: Equity	All households that are income-eligible for energy assistance programs spend less than 5% of their household income on energy costs.	Energy prices are stable and affordable for all Minnesotans.
Initiative 4.1: Enhanced and resilient grid infrastructure	Build out electricity generation and transmission capacity, optimized for reliability and cost to achieve the 100% carbon-free electricity by 2040 law.	Capacity of electric service in Minnesota is increased.
Initiative 4.2: Clean energy sources	Energy project review meets or exceeds goals for timeliness established in the Minnesota Energy Infrastructure Permitting Act.	Energy project review is effective and efficient.
	Increase installed capacity of distributed energy resources, optimized to achieve the 100% carbon-free electricity by 2040 law.	Distributed clean energy generation is expanded.
Initiative 4.3: Dispatchable clean energy and storage	Reduce megawatt-hours of wind energy curtailed by 10% per year.	Wasted surplus energy is reduced.
	Increase energy storage capacity installed, accounting for both capacities and durations, optimized to achieve the 100% carbon-free electricity by 2040 law.	Energy storage capacity is increased.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

With many Tribes moving toward energy sovereignty, it's important that the state support these efforts to help Tribal governments as well as community members obtain clean energy. Upgrading power grid capacity, installing renewable energy sources, supporting Tribally owned energy start-up business operations, and integrating energy efficiency throughout current and future infrastructure are some of the pressing needs on Tribal lands.

The following are key priorities identified through Tribal-State coordination:

- While clean energy options are of interest to Tribes, the impacts to Tribal lands and resources are a huge concern. Consideration of the environmental impacts resulting from clean energy material extraction and production on the surrounding ecosystems is critical in clean energy development.
- Upgrading grid capacity for business operations and community member houses is essential. Currently, grids are either at capacity or constantly overloaded, leaving Tribes without power for extended amounts of time.
- Smaller areas of renewable energy sources, such as microgrids, for individual homes or smaller communities could help with reducing grid overload, as well as cutting down on reservation-wide blackouts during energy disruptions. This may also help mitigate high energy costs to Tribal members.

Clean energy funding and coordination

These are examples of funding and coordination that advance the clean energy transition:

- Four Tribal Nations (Bois Forte Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Leech Lake Band of Ojibwe, Lower Sioux Indian Community) as well as the Midwest Tribal Energy Resources Association (MTERA) were some of the 25 organizations that received a share of $6 million in federal grant funding from the Minnesota Department of Commerce's Energy Resource Division to pursue clean energy opportunities.
- Tribal Nations across Minnesota formally established the Tribal Advocacy Council on Energy (TACE), which is a step toward strengthening Tribal-State relations and identifying energy-related issues while enhancing energy sovereignty.
- Seed grants from the Clean Energy Resource Teams (CERTs) were awarded to Tribal and overburdened communities across Minnesota to fund energy efficiency and renewable energy projects. For example, MTERA and Akiing 8th Fire, both Tribally associated organizations, were awarded seed grants to help Tribal communities complete their energy projects.
- With a $1.8 million grant through the U.S. Department of Energy's Energy Auditor Training Program, the Minnesota Department of Commerce partnered with the White Earth Tribal and Community College to launch an energy jobs training program. Through this program, participants receive experience in energy auditing through training, skills, and hands-on work with the college, organizations, and businesses across Minnesota without the need for a four-year college degree.

We all have a role

Many partners must contribute to the efforts to advance clean energy and increase its availability.

- Individuals can support implementation of the 100% carbon-free electricity by 2040 law by participating in public hearings for clean energy projects and taking advantage of carbon-free technologies and utility- and government-offered programs.
- Governments can expand advocacy for carbon-free technologies, regulatory frameworks, and financial incentives and can provide technical assistance and education for promoting clean energy and achieving our statutory targets.
- Local governments can install clean energy systems on public facilities or lands, create programs to help residents save energy, and support the establishment of district thermal energy systems.
- Businesses, nonprofits, and utilities can work together to expand consumer education, improve efficiency of the grid, and ensure equitable access to clean energy across the state.

Clean energy supports a resort owner's bottom line

The Lodge of Whispering Pines, located on Big Lake in Ely, is a classic Northern Minnesota resort. Rustic log cabins and campsites are scattered among tall pine, birch, and balsam trees, nestled on the on the edge of the Boundary Waters Canoe Area. Guests flock to the lodge to find peace and connect with nature.

One thing sets this resort apart from their neighbors in the north woods — The Lodge of Whispering Pines is powered with energy from the sun.

Owner and operator Daniel Houle bought the property in 2022 and noticed that energy costs were a big burden for the business. The cost of powering the property with diesel fuel meant he could not stay open during the winter months, limiting his operating season and leaving his property empty during the beauty of a Minnesota winter in the Superior National Forest.

With the help of a State Competitiveness Fund grant from the Minnesota Department of Commerce and a U.S. EPA Rural Energy for America funding, Houle invested in 72 solar panels that generate energy stored in batteries on his property. The solar power generated by their panel operation is 38 kilowatts and the batteries have a total storage capacity of 140 kilowatt hours.

"Seventy-two solar panels in our array, up on top of a ridge," Houle said. "It's a step into the new future that we see." The Lodge at Whispering Pine is no longer powered by diesel, has lower energy costs, and is able to open for all four seasons — a win-win-win for this small business and the community.

Houle is not alone. From 2022 to 2023, 8,740 Minnesota households claimed the Residential Clean Energy tax credit to install solar or geothermal energy solutions, and 60,110 households claimed the Energy Efficient Home Improvement Credit to offset costs of improvements like insulation, heat pumps, and efficient water heaters.

These programs are under threat due to policy changes at the federal level, but the State of Minnesota is committed to maintaining state-based incentives for families and businesses to invest in clean energy. By doing so, we can lower energy bills and ensure our state is powered with reliable clean energy.

Goal 5
Healthy lives and communities

Goal 5: Healthy lives and communities

Protect health and advance equity in a changing climate.

Challenges and opportunities

The challenge		The opportunity
Climate change isn't just a future threat — it's an unfolding health crisis in Minnesota, touching everything from mental health and cultural traditions to the safety of the air we breathe and the food we eat.		Taking action to address climate change improves public health and reduces the health impacts of extreme heat, poor air quality, unsafe drinking water, and climate-related diseases.
Many activities that worsen climate change also worsen air pollution and water pollution, which harm our health.		Reducing GHG emissions through cleaner transportation and energy, more efficient buildings, and a climate-smart food system will improve the health and well-being of people across the state, while saving money for households and communities.
All Minnesotans are impacted by climate change, but some are more at risk than others based on pre-existing health conditions, age, race, gender, economic status, area of work, geography, and systemic inequities.		Involving the communities most at risk from climate impacts in finding and carrying out solutions — and making sure climate action resources are shared fairly — will help make Minnesota a better place to live for all.
If we fail to act swiftly, climate change will accelerate harmful health impacts and drive up costs across the economic, housing, and health care systems.		A wide range of coordinated actions — such as improving emergency preparedness, increasing access to cooling, weatherizing homes, and protecting green space and trees — will create a healthier, more connected, and economically stable future for all.

Context

Minnesota's changing climate poses serious risks to public health. The state is committed to protecting residents and preventing further harm.

While climate change affects everyone, some groups — such as people working outdoors, those living with health conditions, and communities experiencing economic hardship — often face greater exposure to climate hazards due to systemic inequalities and environmental conditions.

- Heat stress: Rising temperatures increase risks of dehydration, heat stroke, heart issues, and death.
- Wildfire smoke: Harmful chemicals and particles released into the air can worsen heart and respiratory conditions, such as asthma.
- Mental health: Extreme weather, job loss, and property damage contribute to anxiety, depression, trauma, and substance misuse — especially among farmers and land-connected communities.
- Vector-borne diseases: Tick- and mosquito-borne illnesses are likely to shift in range and severity.
- Extreme weather events: Floods, storms, and icy winters cause injuries and fatalities.

Carbon neutral

Activities that worsen climate change are also harming our health. Burning fossil fuels creates air pollution that damages the heart and lungs. For example, car-dependent transportation is a source of emissions and air pollution and harms health in multiple ways — including traffic injuries and fatalities, sedentary behavior, and high transportation costs that strain household budgets and limit access to health care, healthy food, and other basic needs. Emissions reductions are not just good for the planet, it's good for our health, too.

Resilient

All parts of Minnesota's economy and society affect our health, including transportation, jobs, energy, housing, and agriculture. Resilient systems are essential to protect individuals and communities.

- **Drinking and recreational water protection** — Floods, wildfires, and droughts increase the risk for well contamination, degraded source water, fish contamination, and drinking water supply disruptions.
- **Clean air** — Air pollution worsens respiratory and heart health while also driving climate change.
- **Healthy food and agricultural systems** — Climate change threatens crop yields, food quality, and affordability.
- **Resilient housing** — Everyone, including those experiencing homelessness, deserves to live in a safe, stable home that protects against extreme temperatures, flooding, poor air quality, and other hazards.

- **Safety outdoors for play and work** — Outdoor workers are an essential part of our economy, and outdoor recreation is an essential part of Minnesota's culture. It's our priority to keep us all safe.
- **Strong, prepared community services** — Climate stress strains health care, schools, and other vital services, weakening our ability to respond to and recover from climate impacts.

Tackling climate-related impacts on our health and well-being demands cross-sector collaboration. Government, businesses, and community leaders must work together to develop comprehensive, lasting solutions.

Equitable

The impacts of climate change hit hardest where health, economic, and social challenges already exist. People facing heightened risk include low-income families, people with chronic illnesses, outdoor workers, Indigenous communities, and children.

Indigenous communities are especially at risk as climate shifts threaten treaty rights, cultural traditions, and health.

Rising temperatures drive up energy costs, worsening financial strain. Poor air quality, extreme heat, and limited access to green spaces compound health issues — especially in overburdened communities.

These inequities weaken our collective resilience. When some communities are left behind, we all bear the costs through strained health care systems, economic instability, and social fragmentation.

Actions: Healthy lives and communities

Protect health and advance equity in a changing climate.

Initiative 5.1: Cooler, safer communities

Keep people and places protected from extreme heat's harmful effects.

5.1.1 Make housing safer from extreme heat, more affordable, and easier to access.*

5.1.2 Advance heat-resilient community planning and building design for health protection.*

5.1.3 Make workplaces safer from extreme heat.*

5.1.4 Make schools and child care centers safer from extreme heat.*

5.1.5 Make group homes, care facilities, shelters, and prisons safer from extreme heat.*

5.1.6 Advance planning, research, and information sharing for an effective, community-informed extreme heat response.*

Initiative 5.2: Protection from poor air quality

Safeguard Minnesotans from air pollution and wildfire smoke and work to reduce overall air pollution.

5.2.1 Inform Minnesotans about the health impacts of poor air quality, wildfires, and wildfire smoke and share health protection guidance.

5.2.2 Advance research on the health effects of poor air quality to improve policy, develop interventions, and protect high-risk groups.

5.2.3 Make it easier for agencies and sectors to work together on air and health initiatives.

5.2.4 Protect the health of Minnesotans by reducing air pollution and avoiding activities that worsen air quality to offset the impact of wildfire smoke.

Initiative 5.3: Safe water

Ensure Minnesotans have reliable access to clean drinking water.

5.3.1 Improve flood planning and backup systems to keep public drinking water safe during and after floods, wildfires, or droughts.

5.3.2 Expand support and testing for private well users so that their drinking water is safe during and after floods, wildfires, or droughts.

Initiative 5.4: Community care

Strengthen social connection, mental health, food security, and access to nature amid climate change.

5.4.1 Provide behavioral health resources after climate-related disasters or emergencies.

5.4.2 Promote mental well-being and help people cope with and recover from the mental, emotional, and social impacts of climate change.

5.4.3 Strengthen social cohesion to ensure that communities are connected, supported, and equipped to withstand climate-related challenges.

5.4.4 Preserve culturally significant places and adapt outdoor recreation and public lands amid climate change.

5.4.5 Reduce food insecurity and improve climate resilience by increasing access to local, healthy, low-carbon intensive, and culturally appropriate foods.*

Initiative 5.5: Climate-smart public health

Strengthen capacity, communications, and preparedness to protect health amid climate change.

5.5.1 Increase understanding of how climate change impacts health and who is most at risk.

5.5.2 Inform Minnesotans about climate-related health risks and share protective guidance through coordinated outreach with trusted partners across diverse channels.

5.5.3 Strengthen capacity of state, local, and Tribal public health agencies to reduce climate-related health risks.*

Initiative 5.6: Advance equity, resilience, and justice

Address root causes behind unjust climate impacts and empower communities for lasting change.

5.6.1 Build trusted, coordinated systems that elevate community priorities and collaboration in climate action.*

5.6.2 Prioritize communities facing disproportionate climate impacts when distributing funds and resources and address structural barriers that limit equitable access to this support.

5.6.3 Integrate climate resilience and health equity into decision-making to protect health and prevent harm.

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Health impacts

The following metrics help us track climate-related health risks and outcomes so we can see trends, understand who is most impacted, and focus our actions and resources where they're needed. Many initiatives across the Climate Action Framework, as well as factors beyond climate action, influence these health outcomes. Working across industries and sectors on climate action is necessary to reduce these health impacts and inequities for all Minnesotans. We will continue to track the following metrics and add new ones to further our understanding of how climate change affects Minnesotans' health and well-being.

Climate-related impacts	Metric for health risks and outcomes	Key desired result	Examples of climate actions that could impact the key desired result
Extreme heat	Emergency room visits for heat-related illness	Heat-related illnesses and deaths are reduced.	Increase in multimodal and active transportation, compact and multimodal-oriented development, resilient landscapes and ecosystems, community capacity and empowerment, green space, tree planting, building weatherization, heat mitigation in communities, social cohesion, access to resilience hubs and cooling centers, and resilience planning.
Poor air quality	Emergency room visits for asthma due to poor air quality	Air pollution-related illnesses and deaths are reduced.	Reduction in air pollutants (particulate matter, nitrogen oxides, and ozone) through implementation of GHG reduction initiatives in the transportation, electricity generation, industrial, and buildings sectors. Increase in multimodal and active transportation, compact and multimodal-oriented development, resilient landscapes and ecosystems, community capacity and empowerment, green space, tree planting, building weatherization, social cohesion, access to resilience hubs, and resilience planning.
	Number of Minnesota census tracts with air pollution below the health benchmark for poor air quality	Air quality in Minnesota is improved, especially in communities facing the highest burden.	
	Number of Minnesota census tracts in environmental justice areas with air pollution below the health benchmark for poor air quality		

Targets: Healthy lives and communities

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Equity	By 2035, 40% of funding for climate mitigation and adaptation initiatives benefits communities facing disproportionate climate impacts.	Funding for climate mitigation and adaptation initiatives meaningfully benefits communities facing disproportionate climate impacts.
Initiative 5.1: Cooler, safer communities	Increase the share of communities that address extreme heat in their all-hazards plan to 90% by 2030.	All Minnesota communities protect residents from extreme heat through planning, infrastructure, and nature-based adaptation.
	Achieve 30% tree canopy coverage by 2030 and 40% by 2050 in all Minnesota communities.	
Initiative 5.2: Protection from poor air quality	Increase the number of Minnesota-based AirNow app users by 10% by 2030.	All Minnesotans monitor air quality so that they can be safe during poor air quality days.
Initiative 5.3: Safe water	Increase the share of community public water systems that have more than one well for their water source to 94% by 2035.	Minnesota drinking water systems are prepared for climate disruptions.
	Increase the share of community public water systems that have emergency power backup systems to 70% by 2035.	
Initiative 5.4: Community care	By 2035, 100% of Minnesotans know where to find and have access to a resilience hub or cooling center within a reasonable distance or travel time from home.	Minnesota communities have increased social cohesion and expanded community services that support climate resilience and health protection.
Initiative 5.5: Climate-smart public health	By 2030, increase the percentage of local governments and Tribal Nations with health and safety plans that specifically discuss how to increase local resilience to extreme weather events and/or adapt to climate impacts.	State, local, and Tribal governments have strengthened capacity, communications, and preparedness to protect health amid climate change.
Initiative 5.6: Advance equity, resilience, and justice	By 2035, 40% of funding for climate mitigation and adaptation initiatives benefits communities facing disproportionate climate impacts.	Funding for climate mitigation and adaptation initiatives meaningfully benefits communities facing disproportionate climate impacts.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Minnesota Department of Health (MDH) Office of American Indian Health and the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Tribes are sovereign nations. Practicing cultural traditions and lifeways is an inherent right of Tribes and intrinsically interconnected with Tribal communities' health and well-being. More frequent extreme weather events, flooding, and rapidly shifting seasonal patterns pose detrimental and fundamental threats to Tribal and urban American Indian communities' traditions and lifeways, including their ability to exercise their treaty rights to hunt, fish, gather, and harvest in ceded lands and waters. As Tribal communities reclaim and revitalize traditional practices and harvesting methods, the health and well-being of Tribal communities rely on healthy, thriving cultural resources and abundant natural resources.

The following are key priorities identified through Tribal-State coordination:

- Climate change affects access to Tribal cultural resources, events, and lifeways, and it threatens Tribal health and well-being in wide-reaching ways through impacts on nutrition, physical activity, storytelling, social connection, and financial security. Policies and collaboration efforts must protect these resources and support revitalization efforts in Tribal and urban American Indian communities.
- Climate change is harming Indigenous food systems by shrinking wild rice beds, tick infestations killing wild game, polluted fisheries due to flooding, sporadic weather impacting maple sugar harvesting, and contamination of growing areas for medicinal plants and wild foods. Loss of traditional food access and practices harms Tribal and urban American Indian communities' physical, mental, social, economic, and spiritual health. Advancing food sovereignty is critical for the health and self-determination of Tribal and urban American Indian communities.
- Air quality monitoring is essential to ensure community members understand the effects of poor air quality that may worsen asthma and other health conditions and limit the ability to practice cultural traditions.

Colonialism isn't only part of the past. The ties between colonialism and climate change present challenges to traditions and ways of life that have supported communities for generations. Decision-making processes and efforts to support the health and well-being of American Indians and Alaska Natives in a changing climate must center Tribal sovereignty and self-determination, include Tribal communities and urban American Indian communities as partners, uplift traditional knowledge, and recognize and address the harms of continued colonialism.

Tribal-State collaboration

Food sovereignty and vibrant local food economies funding

MPCA and MDH will distribute $15 million in non-competitive funding to Tribes in coordination with Tribal Nations to improve food security, expand local food economies, strengthen food sovereignty, and reduce climate pollution in Tribal food systems.

We all have a role

Working together with overburdened communities, local and Tribal governments, businesses, nonprofits, faith-based organizations, and schools, we can build resiliency while reducing health disparities for those most impacted by climate change.

- Local decision-makers can advance community climate solutions by making a visible commitment to climate action and working with communities to develop and implement a local climate action plan that includes health-protective strategies.
- Local public health staff, emergency managers, and community leaders play a key role in helping Minnesotans stay safe during days of extreme heat by crafting heat safety strategies that meet local needs. The Minnesota Extreme Heat Toolkit contains flexible strategies and guidance to protect Minnesota communities.
- Local governments and organizations can create resiliency hubs to protect people during extreme weather events.
- Employers can protect outdoor and service workers from extreme heat by providing appropriate breaks to cool off and other measures. Office workers can be protected by offering telecommuting options, reducing GHG emissions and air pollution, and supporting families.
- Public health organizations can track the health impacts of climate change and partner with communities to craft and implement strategies, such as peer education about health-protective strategies for heat, poor air quality, and flooding.
- Educational institutions and universities can support educator access to professional learning opportunities and resources to prepare future generations by raising awareness of climate change and resiliency strategies.

Community connections are critical in preparing for climate change

The American Indian Community Housing Organization (AICHO) is an Indigenous-led nonprofit based in Duluth. AICHO leads numerous programs, including Gimaajii, AICHO's headquarters and supportive housing program featuring 29 units of housing; Dabinoo'Igan, the region's first culturally specific emergency domestic violence shelter; and the Niiwin Indigenous Foods Market.

Recognizing the connection between community health, housing, and climate change, AICHO started a climate and cultural resiliency initiative. "Overall, we're trying to engage our community around the connection between how we have survived in the past, culturally speaking, our relationship with the environment and land, and how we can be prepared for coming change," said LeAnn Littlewolf, AICHO's executive director.

LeAnn Littlewolf, executive director, American Indian Community Housing Organization

This initiative has included a wide variety of actions, all aimed at reducing pollution and the impacts of climate change on their community. First, AICHO focused on reducing waste, working with their children's program to produce, brand, and package an organic fertilizer (Worm Juice) from their compost. They also installed a 16.5-kilowatt solar array on their rooftop to power their headquarters with clean energy.

Importantly, AICHO also uses their role as a source of information and resources to educate people on how to prepare for climate change. "We need to have good partnerships to get good information out about the health impacts of climate change. Strong partnerships made a huge difference in the pandemic, and that absolutely applies to issues around climate change," said Littlewolf.

Goal 6
Clean economy

Goal 6: Clean economy

Build a thriving carbon-neutral economy that produces goods and services with environmental benefits and equitably provides family-sustaining job opportunities.

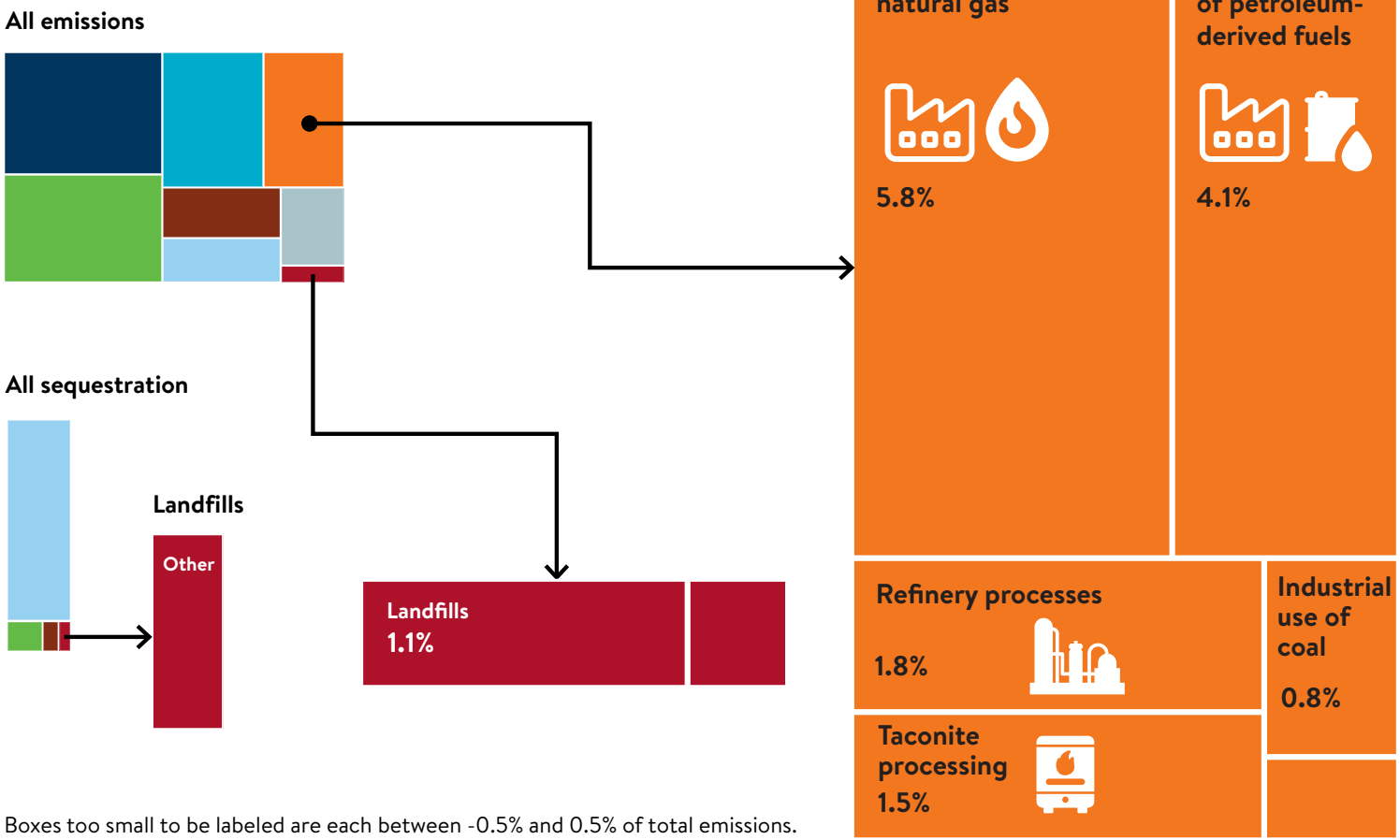
Challenges and opportunities

The challenge	The opportunity
Minnesota's economic activity produces emissions and pollution that affect our air, water, and climate — posing risks to health, livelihoods, and local environments across the state.	Building a clean economy will grow Minnesota's prosperity by opening new markets, strengthening local supply chains, and utilizing waste streams, keeping more dollars, jobs, and materials in our communities.
As demand rises for low-carbon goods, clean energy, and circular practices, Minnesota businesses, workers, and communities must adapt to remain competitive and avoid exacerbating existing inequities. Minnesotans need equitable access to tools, training, and support to build and benefit from a cleaner economy.	With smart investment, cross-sector collaboration, and a systems lens, Minnesota can expand homegrown industries and build a cleaner, more resilient, and more inclusive economy.
Economic production systems are typically designed using a linear, input-output model that can lead to waste.	Local circular economy strategies — like remanufacturing and food recovery — reduce emissions and waste while keeping resources in circulation and lowering costs.
The clean economy future will require workers, communities, and businesses to acquire new skills and build resiliency. Some Minnesotans have limited access to well-paying careers and the training that allows entry to career paths that help mitigate and adapt to climate change.	By investing in workforce programs and strengthening workforce development partnerships with unions and community organizations, Minnesota can equip more residents with the skills to participate in the clean economy. Removing barriers to access can ensure that all communities, including those historically excluded, will benefit.

Industrial and waste sectors' contribution

Emissions and sequestration

Percents are of total Minnesota emissions.



Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

Minnesota businesses, communities, and institutions are already moving toward a cleaner economy through investments in energy efficiency, low-carbon products, and cleaner production methods. These early efforts are showing that climate action supports jobs, innovation, and economic growth. Building on this momentum will be key to reaching our long-term goals.

Industrial activity is one of Minnesota's largest sources of GHG emissions, accounting for 18% of the total. Industrial emissions include both energy-related emissions and those from processing industries like food and ethanol production. Some emissions, such as those from high-heat manufacturing, are harder to eliminate and may require new technologies. Others, like switching to electric systems or improving efficiency, are already within reach.

Clean fuels and electrification offer ways to reduce emissions from industrial processes, space heating, and transportation. While waste systems represent a smaller share of direct emissions (1%), strategies to reduce methane — such as from landfills, wastewater systems, and leaking pipelines — can offer meaningful climate and health benefits. Circular economy strategies also reduce emissions upstream by lowering the need for raw materials and energy. By extending the life of existing goods and producing more goods locally, Minnesota can cut emissions not just here, but in other places where products are currently made and transported from.

Finally, to meet long-term climate goals, Minnesota will need to expand carbon removal efforts — such as storing carbon in natural and working lands and in long-lived wood products, capturing it from industrial processes, and exploring ways to turn captured carbon into useful materials.

Resilient

Minnesota's economy is already impacted by extreme weather and shifting seasons. These changes disrupt business operations and increase volatility in jobs, revenues, and public budgets. The risks aren't evenly distributed: Outdoor workers face greater exposure to weather-related health hazards, while rural communities and smaller businesses often have fewer resources to prepare for or recover from disruptions.

Building a clean economy can strengthen Minnesota's ability to weather these challenges. Clean technologies and fuels help reduce dependence on volatile energy markets, while local circular economy strategies, like remanufacturing and food recovery, keep resources in circulation and lower costs. Supporting businesses and workers through this transition also builds long-term economic stability by preparing Minnesotans for new technologies and changing market demands. Investing in a clean economy now positions Minnesota to lead, rather than lag, as the world moves toward low-carbon goods and services.

Equitable

Not all Minnesotans have the same opportunity to participate in or benefit from the clean economy. Rural communities, low-income households, and communities that have experienced historical disinvestment often face higher energy burdens, greater exposure to pollution and climate risks, and more difficulty accessing clean technologies and infrastructure like recycling and reuse programs or home energy upgrades. These gaps are especially visible across regions, with significant differences in access between the Twin Cities metropolitan area and Greater Minnesota.

Focusing on the affordability and accessibility of technologies, innovations, and resources, and strengthening workforce development partnerships and coordination, can provide a foundation for a more inclusive clean economy. Whether it's helping a small manufacturer switch to low-carbon production, supporting community-led repair and reuse programs, or training the next generation of clean economy workers, equity is a core part of how Minnesota can achieve lasting climate and economic progress.

Actions: Clean economy

Build a thriving carbon-neutral economy that produces goods and services with environmental benefits and equitably provides family-sustaining job opportunities.

Initiative 6.1: Clean, sustainable, and resilient industrial businesses

Reduce emissions by helping businesses adopt technologies and strategies that benefit them, Minnesotans, and the environment.

6.1.1 Incentivize industrial businesses to adopt low-carbon technologies and strategies.*

6.1.2 Develop policies that support flexible adoption of low-carbon technologies and strategies by businesses, while helping meet statewide emissions goals.

6.1.3 Provide outreach and technical assistance to businesses on low-carbon technologies and strategies in partnership with regional governments and organizations.*

Initiative 6.2: Clean fuel and clean technology innovation

Create pathways to develop, test, and deploy affordable and scalable technologies that reduce emissions from industrial processes.

6.2.1 Encourage technologies that help businesses improve energy efficiency and switch to electricity where possible.*

6.2.2 Advance cost-effective, scalable clean fuel technologies that reduce lifecycle emissions.

6.2.3 Support carbon capture, storage, and utilization technologies that are affordable, store carbon long-term, and don't increase overall emissions.

Initiative 6.3: Strong circular economy

Reduce emissions and waste through reuse, repair, recycling, and decreasing demand for new materials.

6.3.1 Reduce waste from homes, businesses, and institutions by focusing on prevention and reuse.*

6.3.2 Increase recycling at homes, businesses, and institutions and promote the use of recycled materials.*

6.3.3 Reduce emissions from waste systems and capture emissions for use as a renewable energy source.

Initiative 6.4: Resilient and equitable clean economy workforce

Prepare workers for new, existing, and changing career opportunities and create high-quality, accessible clean economy jobs.

6.4.1 Help workers and communities that depended on climate-vulnerable or carbon-intensive industries adapt and transition as climate and technologies change.

6.4.2 Develop and promote clear education and career pathways for clean economy jobs.

6.4.3 Work with employers to create high-quality clean economy jobs that are accessible to all.

6.4.4 Remove barriers to education and job opportunities to grow the clean economy workforce.*

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Clean economy

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Carbon neutrality	Reduce GHG emissions from the industrial sector by 30% by 2050.	Minnesota reduces annual net GHG emissions from the industrial sector.
	Reduce GHG emissions from the waste sector by 70% by 2050.	Minnesota reduces annual net GHG emissions from the waste sector.
Pillar: Resiliency	Ensure clean economy businesses remain open at the same or a higher rate across the state than businesses overall.	Minnesota's businesses are resilient to climate change impacts.
Pillar: Equity	Grow clean economy businesses throughout Minnesota by 10% by 2035.	Increased economic well-being of communities.
Initiative 6.1: Clean, sustainable, and resilient industrial businesses	Increase the share of onsite renewable energy use in the industrial sector by 50% by 2040.	Expanded adoption of low-carbon technologies in industrial facilities.
Initiative 6.2: Clean fuel and clean technology innovation	Reduce emissions per dollar of economic output produced by 90% by 2050.	Accelerated deployment of clean fuels and technology.
Initiative 6.3: Strong circular economy	Reduce trash in Minnesota by 70% by 2050.	Decreased landfilling and incineration due to increased waste reduction, reuse, and recycling.
Initiative 6.4: Resilient and equitable clean economy workforce	Add 50,000 clean economy jobs by 2035 across the state.	High-quality clean economy jobs are created and accessible to all.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Shifting to cleaner business operations, programs, and other initiatives across Tribal communities will require close collaboration between Tribes and the State of Minnesota to secure funding, expand capacity, and provide training that supports climate-resilient economic opportunities.

The following are key priorities identified through Tribal-State coordination:

- Water is a valuable natural and cultural resource to Indigenous people and culture — especially the Ojibwe, for whom harvesting wild rice is an important tradition — and it must be protected.
- Tribe-State collaboration on equitable clean energy jobs, training, and career opportunities would allow Tribes to move forward with more energy-efficient and clean options for Tribal businesses, programs, and homes.
- Increased workforce and employment opportunities are needed for contracted work on maintenance and upkeep of clean energy technology such as solar panels, heat pumps, windmills, etc.

Tribal-State collaboration

Existing aid and grants

Tribal Nation Aid, enacted in 2023, provides $35 million in state aid each year to eligible Tribal Nations. An eligible Tribal Nation is any of the 11 federally recognized Tribes located in Minnesota that elects to participate and receive a distribution. Minnesota also offers tuition assistance and a fee-free pathway for eligible students attending Minnesota State or University of Minnesota institutions, financial assistance for eligible students through the Minnesota Indian Scholarship Program, and funding for tourism development through the Tribal Nations Tourism Grant Program.

We all have a role

Advancing Minnesota's clean economy will take more than state policy. It will require shared effort across sectors, regions, and communities. From clean technology and fuels to circular economy systems and workforce development, there are many ways to contribute, and different types of support are needed to make action possible.

- Local governments can create policies and partnerships that support circular economy initiatives, connect businesses with communities, and invest in infrastructure that strengthens local economies. They can establish climate-friendly procurement policies and practices and establish and strengthen sustainable waste management programs.
- Businesses and industries can develop cleaner technologies and products, participate in energy and resource efficiency programs, and invest in workforce practices that improve job quality and resilience.
- Tribal governments can shape clean economy efforts through leadership in sustainable resource stewardship, energy sovereignty, and community resilience.
- Educational institutions and training providers can grow programs that prepare Minnesotans for evolving jobs and help more people access quality career paths.
- Labor organizations and workforce development boards can help ensure job quality, expand training access, and align regional strategies to support workers and businesses.
- Community-based organizations and nonprofits can elevate local knowledge, reduce barriers to participation, and build trust and capacity within communities.
- Philanthropic and financial partners can support innovation, pilot programs, and community-driven solutions.
- Research and innovation institutions can advance new technologies, materials, and methods that strengthen Minnesota's clean economy leadership.
- Federal partners can provide critical investment, technical support, and policy alignment to accelerate progress.
- Individuals can contribute by supporting local businesses, reusing and repairing goods, reducing waste, and pursuing clean economy careers.

Building the next generation of Minnesota businesses

Andrew J. Jones, PhD, began thinking about how to remove carbon dioxide through natural means — a process known as carbon sequestration. He kept coming back to one simple idea: Let nature do what it already does best.

Jones worked with his mentor and former professor, Paul Dauenhauer, PhD, at the University of Minnesota Chemical Engineering and Material Science Department to develop an innovative process to capture carbon dioxide through photosynthesis.

Their invention led to the launch of Carba, a company based in the Twin Cities that converts woody biomass compost, a high emitter of greenhouse gases, into a solid carbon that can then be buried to ensure long-term carbon sequestration.

Carba represents the innovative, forward-thinking companies at the heart of Minnesota's clean economy.

Traditional carbon-capture technologies require large amounts of energy to pull carbon dioxide from the air, making them costly and difficult to scale. Carba avoids that challenge by using a mobile torrefaction reactor, a device that transforms low-value biomass, such as storm-damaged trees or ash trees killed by emerald ash borers, into inert carbon char using very little energy.

"We need to get emissions under control before the world warms by two degrees Celsius, so we have to solve the problem of carbon removal quickly," Jones says. "The solutions have to be affordable and scalable. And if they're biomass-based like ours, they should be mobile to go where the biomass feedstocks are."

The reactor can be transported directly to composting and landfill sites, reducing emissions from hauling material long distances and preventing the biomass from decomposing and releasing carbon back into the atmosphere. The resulting char can be safely buried, locking away carbon for more than 1,000 years, while also offering potential benefits like reducing odors, methane, and PFAS contamination at landfills.

Carba plans to scale its technology rapidly, with a goal of deploying thousands of reactors nationwide to remove carbon at meaningful levels. By pairing natural processes with innovative chemistry, companies like Carba are bringing the future of America's economy to Minnesota.

Goal 7
Efficient and resilient buildings

Goal 7: Efficient and resilient buildings

Build and maintain healthy, comfortable, safe, efficient, and resilient buildings and homes that cost less to operate, pollute very little, and support grid stability.

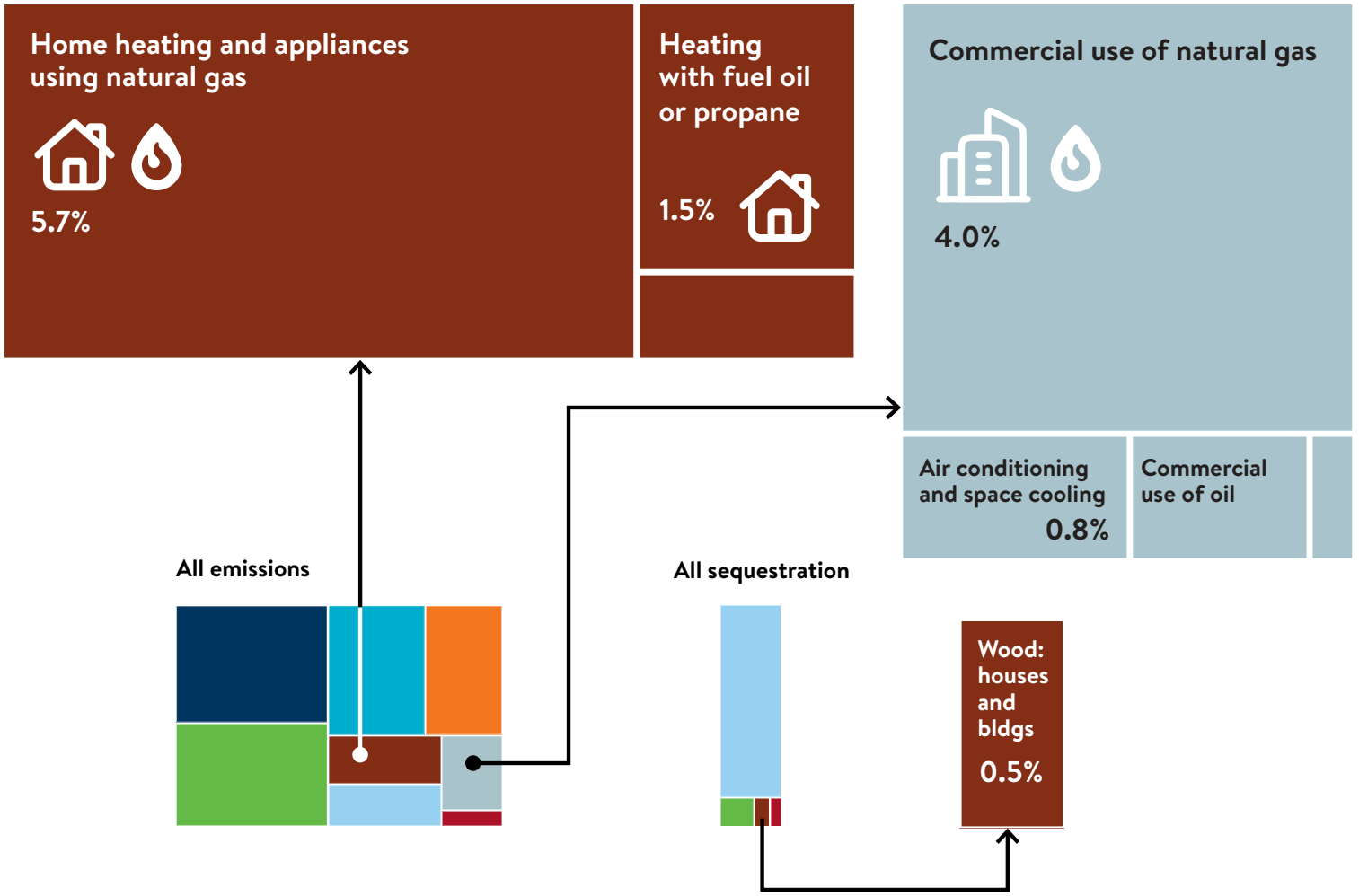
Challenges and opportunities

The challenge	The opportunity
Most buildings in Minnesota were built before today's energy-efficiency standards and rely on fossil fuels for heat.	Modernizing buildings with more efficient and resilient technology will increase their value and help keep them usable longer.
Climate-related impacts, such as strong storms, extreme heat, and poor air quality, are becoming more frequent and severe, posing a constant threat to our buildings and infrastructure. Furthermore, people who are most at risk from climate impacts often live in, or take shelter in, the very buildings most threatened by climate-driven disasters.	Implementing climate-resilience building upgrades will help protect Minnesotans from the impacts of extreme weather, keeping homes, families, buildings, and businesses safer and healthier. Through targeted programs and financing, we can ensure Minnesotans have equitable access to new and existing buildings that are affordable, healthy, safe, decarbonized, and climate resilient.
Older, inefficient homes are more expensive to heat and cool, and upgrades can have high upfront costs. Under-resourced households have Minnesota's highest energy burdens and largest challenges with housing access and affordability.	Updating Minnesota's housing stock with clean, energy-efficient, and smart technology can reduce housing and energy costs for residents, especially those who are overburdened with these expenses. Financial incentives can pay down the initial cost of implementation, while rate design can unlock energy cost savings.

Residential and commercial buildings sectors' contribution

Emissions

Percents are of total MN emissions.



Boxes too small to be labeled are each between -0.5% and 0.5% of total emissions.

Context

Meeting our goals will bring the Climate Action Framework vision to life.

Carbon neutral

Commercial and residential building emissions account for 7% and 9% of the state's GHG emissions, respectively.

Since 2005, GHG emissions from commercial buildings rose 27%, while emissions from residential buildings rose 38%. Emissions from electricity use in buildings are not included in this sector; they are accounted for in the electricity generation sector. Combustion of natural gas for heating and appliances is the largest emissions source and is rising. Reversing this trend will require low-carbon and energy-efficient building technology, investing in building electrification, and retrofitting existing buildings to change the way that energy is used in buildings.

Resilient

Minnesota's climate has always required its buildings to provide shelter from extreme weather. However, as our climate changes, our buildings and their occupants are enduring more complex challenges.

Homes, buildings, and businesses are facing increased impacts from severe storms, hail, straight-line winds, floods, and other extreme weather events. Climate impacts such as extreme temperatures, smoke from wildfires, and severe weather are threatening Minnesotans' health and safety while also damaging buildings.

By strengthening homes, buildings, and businesses against the next extreme weather event, we can protect Minnesotans from the most serious impacts of these changes.

Equitable

Making Minnesota's buildings more climate resilient and energy efficient will lower housing costs and energy bills, particularly for people living in Greater Minnesota and others who are overburdened with these costs.

Upgrading buildings reduces health risks from extreme heat, poor indoor air quality, and other climate impacts that disproportionately affect people who already face the greatest challenges. By ensuring all Minnesotans — regardless of income, geography, or background — can live in safe, affordable, and sustainable homes, we create a more equitable state.

Actions: Efficient and resilient buildings

Build and maintain healthy, comfortable, safe, efficient, and resilient buildings and homes that cost less to operate, pollute very little, and support grid stability.

Initiative 7.1: Decarbonized residential and commercial buildings

Reduce energy use, carbon emissions, and embodied carbon in buildings and building materials.

7.1.1 Increase energy efficiency and heat resistance in buildings.*

7.1.2 Lower energy use through water conservation in buildings.

7.1.3 Electrify buildings to reduce emissions.

7.1.4 Advance on-site renewable energy.*

7.1.5 Reduce embodied carbon in buildings.

Initiative 7.2: Resilient residential and commercial buildings

Integrate innovative technologies, materials, and design methods in buildings to withstand climate impacts.

7.2.1 Strengthen buildings against extreme weather and climate impacts.*

7.2.2 Conserve water in buildings for resilience.*

7.2.3 Pursue building electrification strategies that support grid resilience, lower risk of outages, and reduce stress on carbon-based fuel systems.*

7.2.4 Advance on-site renewable energy with storage for resilience to keep buildings powered and self-sufficient in the event of large outages.*

7.2.5 Promote the use of healthy building materials.*

Initiative 7.3: Reuse of buildings and building materials

Utilize existing buildings to recover materials, prevent waste, and save energy and resources.

7.3.1 Increase adaptive building reuse and continued use.

7.3.2 Increase building deconstruction and material reuse to avoid demolition of buildings that cannot be reused.

7.3.3 Decrease construction waste.

*Subinitiatives identified as Tribal priorities through Tribal Coordination Conversations.

*For a full list of action steps for each subinitiative, see the **action steps supplementary document**.*

Targets: Efficient and resilient buildings

Achieving Minnesota's climate vision requires large-scale, collective climate action around the state.

Initiative/Pillar	Target	Key desired result
Pillar: Carbon neutrality	Reduce GHG emissions from commercial buildings by 40% by 2050.	Minnesota reduces annual net GHG emissions from the commercial buildings sector.
	Reduce GHG emissions from residential buildings by 40% by 2050.	Minnesota reduces annual net GHG emissions from the residential buildings sector.
Pillar: Resiliency	By 2030, 100% of Minnesotans live in homes and places where resilience actions are being taken within their community.	All Minnesotans live in homes and places where resilience actions are being taken.
Pillar: Equity	Increase the number of eligible households served annually by pre-weatherization and weatherization assistance programs to 6,000 homes per program by 2050.	Access to decarbonization and resilience programs is more equitable.
Initiative 7.1: Decarbonized residential and commercial buildings	Reduce energy use in new commercial buildings by 80% by 2036 and in new residential buildings by 70% by 2038.	Energy use in buildings is reduced.
Initiative 7.2: Resilient residential and commercial buildings	By 2030, 100% of Minnesotans live in homes and places where resilience actions are being taken within their community.	All Minnesotans live in homes and places where resilience actions are being taken.
Initiative 7.3: Reuse of buildings and building materials	Double the number of buildings that are deconstructed for building material reuse by 2030.	Building deconstruction for building material reuse is increased.

*For more information on targets, see the **targets supplementary document**.*

Tribal perspectives

This content was developed by the Climate Action Framework Tribal Coordination Team, who convened leaders, staff, community members, and others across Tribes in Minnesota to share their perspectives on climate action.

Future projects that could benefit Tribal community members include retrofitting buildings and homes with energy efficiency options, building with sustainable materials, and reusing construction materials. Infrastructure and buildings in need of repairs could be updated or replaced as needed, the materials repurposed, and the land reclaimed and restored to return the habitat to its natural state.

The following are key priorities identified through Tribal-State coordination:

- Retrofitting existing buildings and ensuring energy efficiency in future buildings will help alleviate high energy use and costs. Weatherization reduces the impacts of severe weather, improving building resiliency for both Tribal buildings and homes.
- The use of sustainable materials, such as hempcrete, could not only improve energy efficiency and related costs, but also community health and well-being by reducing exposure to contemporary building materials that may be toxic.
- Reusing and repurposing building materials can lead to lower GHG emissions, reduce the environmental impact from sourcing new materials, reduce landfill waste, and save on costs relating to all new materials.

Tribal-State collaboration

Hempcrete, innovation, local solutions

At the intersection of innovation and tradition, the Lower Sioux Hemp Program and Housing Project provides sustainable solutions to building needs, empowering the Lower Sioux Indian Community while promoting environmental health. “Seed to sovereignty” captures the community’s mission of sustainability and empowerment. The hemp program is creating jobs, offering world-class training, and building homes that honor both people and the planet. In 2026, Minnesota will become the first state to adopt the newest official residential building codes featuring plant-based building materials. The state’s Technical Advisory Group to the Construction Codes Advisory Council approved adoption of hemp-lime (“hempcrete”) and strawbale construction codes in the 2024 International Residential Codes, allowing for the safe and tested use of hemp-lime insulation in building projects. This building code update supports innovation from Tribal partners like the Lower Sioux Indian Community.

We all have a role

Many partners must contribute to the efforts to make buildings more efficient and resilient, advance adoption of energy technologies, and increase the use of on-site renewables and energy storage.

- Individuals can lower their energy use though more efficient technologies, behavior changes, and home upgrades using utility and weatherization programs.
- Governments can promote resiliency, energy efficiency, clean energy education, technical assistance, and funding for building owners, renters, contractors, and developers.
- Businesses, nonprofits, utilities, and other partners can design, maintain, retrofit, and construct buildings that are resilient and energy efficient and have low GHG emissions.
- Tribal and local governments, with funding supports, are well positioned to help individual households and businesses with energy and weatherization retrofits, to educate community members about the benefits of conservation practices and investments, and to demonstrate energy-saving technologies in public buildings.

Climate-ready homes built to last

Homeowners in Minnesota are weathering a unique storm as climate change drives more costly repairs from severe hail, wind, and rain. Extreme weather events are putting pressure on local government budgets and insurance premiums.

During the 2023 session, Minnesota established a new program to help state residents upgrade their roofs to a standard called FORTIFIED, making them more resistant to high wind, hail, and other extreme weather events. The program, named "Strengthen Minnesota Homes," aims to keep Minnesotans safer and healthier in their homes and to help make home insurance more affordable. Minnesotans who put a FORTIFIED roof on their home or business are eligible for a premium discount or rate reduction on their insurance making it more affordable.

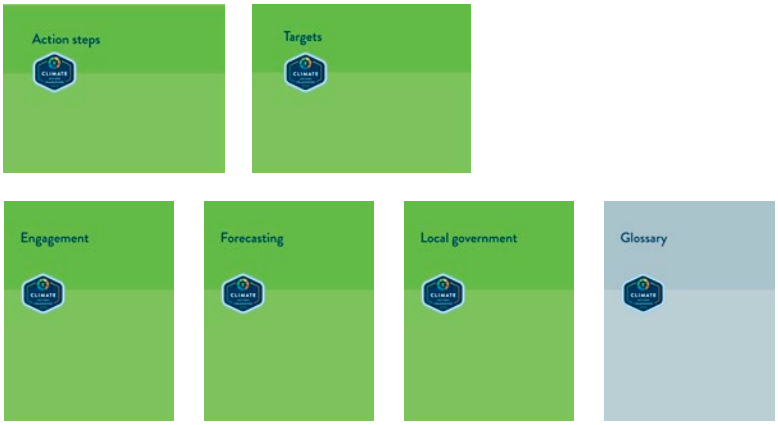
Housing organizations are taking notice. Minnesota Habitat for Humanity chapters have built homes that meet the same FORTIFIED standards utilized by Strengthen Minnesota Homes. According to Habitat for Humanity of Minnesota, "Habitat's work centers on the value of long-term stability for the current homeowner, future homeowners, and our environment. This means building homes that are energy efficient, climate resilient, and often go above the code requirements."

Supplementary documents

Supplementary documents are included with the Climate Action Framework as separate documents.

Supplementary documents:

- **Action steps**
- **Targets**
- **Engagement**
- **Local government**
- **Forecasting**
- **Glossary**



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The 2026 framework was shaped by the skills, knowledge, and diverse perspectives of hundreds of Minnesotans, whose contributions were essential to its development.

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